Drinking Water Surveillance Program

EASTERLY WATER TREATMENT PLANT

Annual Report 1987

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EASTERLY
WATER TREATMENT PLANT

DRINKING WATER SURVEILLANCE PROGRAM

ANNUAL REPORT 1987

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ACKNOWLEDGEMENTS

The Drinking Water Surveillance Program (DWSP) employs a team approach requiring the co-operative effort of the Ministry of the Environment (MOE) staff from Water Resources and Laboratory Services Branch and the Regions, as well as plant operational staff from the Municipalities.

This annual report was produced by the DWSP Group (Ron Hunsinger, Peter Bohm, Carol Sackville-Duyvelshoff, Chris Fung and John McGrachan) and by Pat Lachmaniuk (on developmental assignment to the Drinking Water Section). Helpful input and reviews were received from Drinking Water Section Staff, in addition to reviews by other MOE and municipal personnel.

EXECUTIVE SUMMARY

DRINKING WATER SURVEILLANCE PROGRAM

EASTERLY WATER TREATMENT PLANT
1987 ANNUAL REPORT

The Drinking Water Surveillance Program (DWSP) for Ontario is a program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. Currently, 44 plants are being monitored.

The Easterly Water Treatment Plant is a direct filtration plant that treats water from Lake Ontario. The process consists of coagulation, flocculation, filtration, disinfection and fluoridation. This plant, in conjunction with the R.C. Harris and R.L. Clark plants, serves a population of approximately 2,333,000 people and has a design capacity of 550 x 1000m3/day.

Water samples from the raw and treated sites were taken on a monthly basis. Two sites from the distribution system were incorporated onto the program in July and were sampled on a monthly basis. Parameters were divided into the following groups: Bacteriological, Inorganic and Physical (Laboratory Chemistry, Field Chemistry and Metals) and Organic (Chloroaromatics, Chlorophenols, Pesticides and PCB, Phenolics, Polynuclear Aromatic Hydrocarbons, Specific Pesticides and Volatiles). Specific Pesticides and Chlorophenols were analysed in June and November only.

A summary of results is shown in Table 1.

Coliform bacteria were present in the August distribution system Site 1 sample. The District Officer was notified. Due to its sampling frequency of once per month, the DWSP is not designed to evaluate all aspects of the bacteriological quality of the water; however routine bacteriological monitoring as outlined in the Ontario Drinking Water Objectives (ODWOs) is carried out by the operating authority. In terms of the limited DWSP bacteriological examination the water was of good quality.

Inorganic and Physical parameters were below any applicable health related ODWOs.

Of a total of approximately 110 Organic parameters tested for on a monthly basis, none exceeded health related guidelines.

Many of the substances analysed for were naturally-occurring or treatment by-products.

During 1987 the DWSP sampling results indicated that the Easterly Water Treatment Plant produced good quality water at the plant and this quality was maintained throughout the distribution system.

SOMMAIRE

PROGRAMME DE SURVEILLANCE DE L'EAU POTABLE

STATION D'ÉPURATION DE L'EAU EASTERLY
RAPPORT ANNUEL 1987

Le Programme de surveillance de l'eau potable (PSEP) de l'Ontario fournit des informations immédiates, fiables et à jour sur la qualité de l'eau potable. Le PSEP a débuté officiellement en avril 1986. Il est destiné à englober tous les réseaux municipaux d'alimentation en eau de l'Ontario. Actuellement, 44 stations en font partie.

La station d'épuration Easterly est une station de filtration sans décantation qui traite l'eau du lac Ontario. Le traitement comporte la coagulation, la floculation, la filtration, la désinfection et la fluoration. Cette station, avec celles de R.C. Harris et de R.L. Clark, dessert une population d'environ 2 333 000 habitants et a une capacité nominale de 550 x 1 000 m3/jour.

Des prélèvements d'eau brute et d'eau traitée ont été effectués chaque mois. Deux sites du réseau de distribution ont été ajoutés au programme en juillet et des prélèvements y ont alors été effectués également chaque mois. Les paramètres mesurés appartenaient aux catégories suivantes : bactériologique, inorganique et physique (analyses en laboratoire et sur place, présence de métaux) et organique (composés aromatiques chlorés, chlorophénols, pesticides et BPC, dérivés phénoliques, hydrocarbures aromatiques polynucléaires, pesticides particuliers et composés volatils). Les pesticides particuliers et les chlorophénols n'ont été analysés qu'en juin et en novembre.

Le tableau 1 résume les résultats obtenus.

Des coliformes ont été relevés dans le prélèvement d'août du site 1 du réseau de distribution et l'agent de district en a été avisé. En raison de la fréquence des prélèvements (un par mois), le PSEP ne permet pas d'évaluer tous les aspects de la qualité bactériologique de l'eau. Cependant, comme on le recommande dans le cadre des objectifs relatifs à la qualité de l'eau potable en Ontario, un contrôle bactériologique systématique est effectué par l'exploitant. L'analyse bactériologique limitée du PSEP a révélé une eau de bonne qualité.

Les mesures des paramètres inorganiques et physiques étaient inférieures aux limites applicables fixées par l'Ontario pour l'eau potable.

Pour environ 110 paramètres organiques mesurés chaque mois, aucun résultat n'a dépassé les limites acceptables fixées pour la santé.

Un grand nombre de substances détectées apparaissent naturellement ou sont des produits dérivés de l'épuration.

Les résultats des analyses effectuées en 1987 dans le cadre du PSEP ont indiqué que la station d'épuration Easterly donnait une eau de bonne qualité et que cette qualité se maintenait dans tout le réseau de distribution.

TABLE 1

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT

SUMMARY TABLE BY SCAN (1987)

		RAW			TREATED			SITE 1			SITE 2		
	SCAN	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE	TESTS	POSITIVE	%POSITIVE
	BACTERIOLOGICAL	45	40	88	48	13	27	29	9	31	24	4	16
	CHEMISTRY (FLD)	36	36	100	60	60	100	58	58	100	56	56	100
	CHEMISTRY (LAB)	225	180	80	225	174	77	198	179	90	182	158	86
	METALS	243	130	53	228	110	48	234	124	52	215	117	54
	CHLOROAROMATICS	156	0	0	156	0	0	65	0	0	78	0	0
	CHLOROPHENOLS	12	0	0	12	0	0	.	.	.	.	.	.
	PAH	51	0	0	51	0	0	.	.	.	.	.	.
	PESTICIDES & PCB	295	0	0	295	0	0	126	0	0	148	0	0
	PHENOLICS	12	0	0	12	0	0	.	.	.	.	.	.
	SPECIFIC PESTICIDES	153	0	0	153	0	0	45	0	0	45	0	0
	VOLATILES	339	1	0	337	48	14	168	24	14	167	24	14
TOTAL		1567	387		1577	405		923	394		915	359	

COLIFORMS WERE DETECTED IN ONE DISTRIBUTION SYSTEM SAMPLE. NO OTHER HEALTH RELATED GUIDELINES/LIMITS WERE EXCEEDED.

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
A '.' INDICATES THAT NO SAMPLE WAS TAKEN

DRINKING WATER SURVEILLANCE PROGRAM

EASTERLY WATER TREATMENT PLANT
1987 ANNUAL REPORT

INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. Currently, 44 plants are being monitored. Appendix A contains a detailed description of the DWSP.

The DWSP was initiated at the Easterly Water Treatment Plant in July of 1986. An annual report was published for 1986 (ISBN 0-7729-2553-4).

This report contains information and results for 1987.

PLANT DESCRIPTION

The Easterly Water Treatment Plant is a direct filtration plant which treats water from Lake Ontario. The process consists of coagulation, flocculation, filtration, disinfection and fluoridation. Superchlorination is used for disinfection and to control taste and odour. Sulphur dioxide is used as a dechlorinator and ammoniation is used produce a combined chlorine

residual in the distribution system. This plant, in conjunction with the R. C. Harris and R. L. Clark plants, serves a population of approximately 2,333,000 people. It has a rated capacity of 550 x 1000m3/day and daily flows ranging from 170 x 1000m3/day to 563 x 1000m3/day.

The plant location is shown in Figure 1. Plant process details, in a block schematic, are shown in Figure 2. General plant information is presented in Table 2.

METHODS

Water samples were obtained from four DWSP approved locations;

i) Plant Raw - The water originated from the raw water discharge header and was sampled through a copper sample line. The sample tap is located at the raw water discharge header. Two hours before sampling time pre-chlorination was interrupted to ensure that no chlorine residual remained at this location.

ii) Plant Treated - The water originated from the treated suction channel after addition of all treatment chemicals and was sampled through a copper sample line. The sample tap is located in the treated water suction channel.

iii) Distribution System - Site One - This house is approximately 1.5 kilometers from the

FIGURE 1

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

SITE LOCATION MAP

LOCATION: EASTERLY WATER TREATMENT PLANT

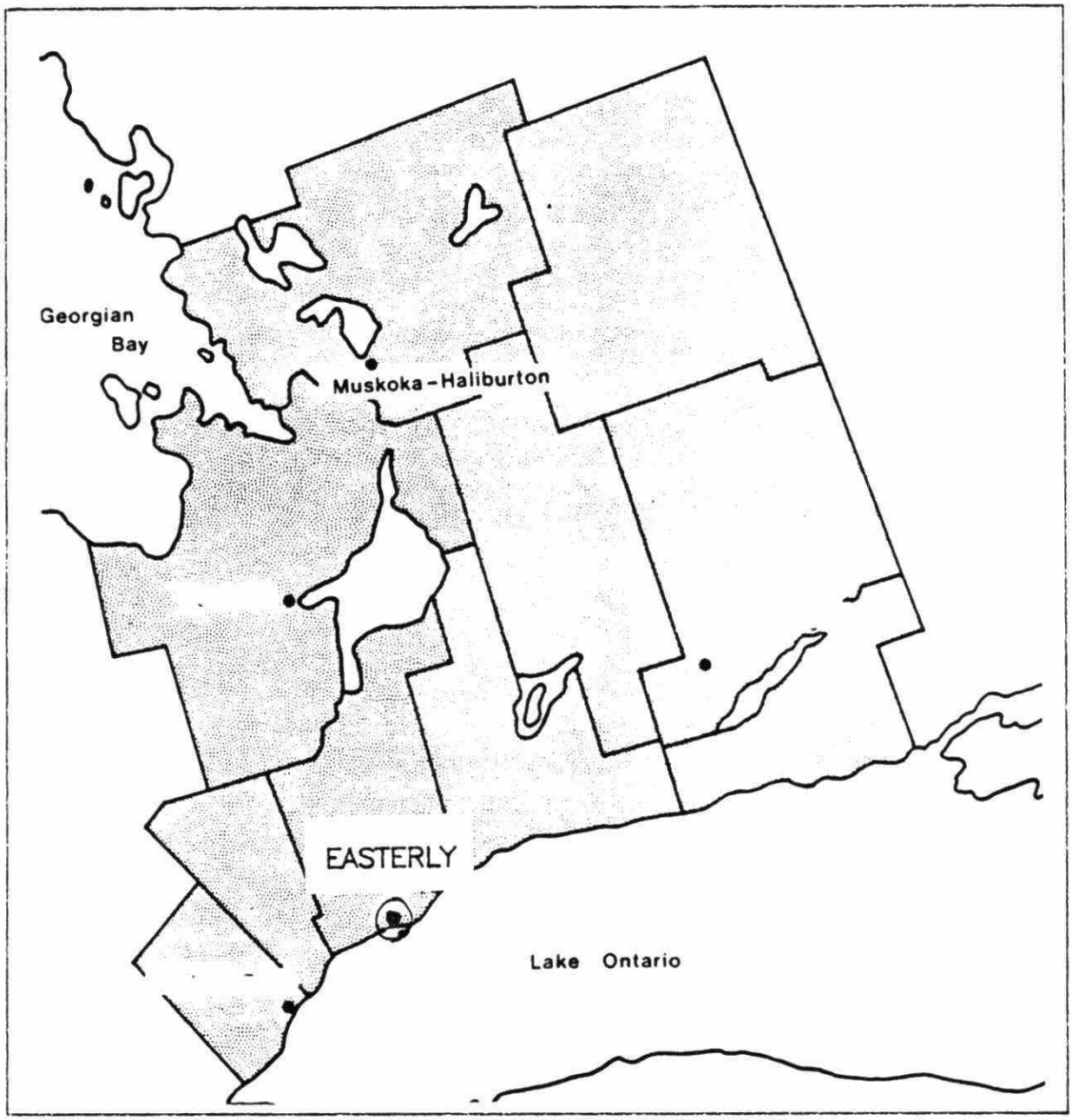
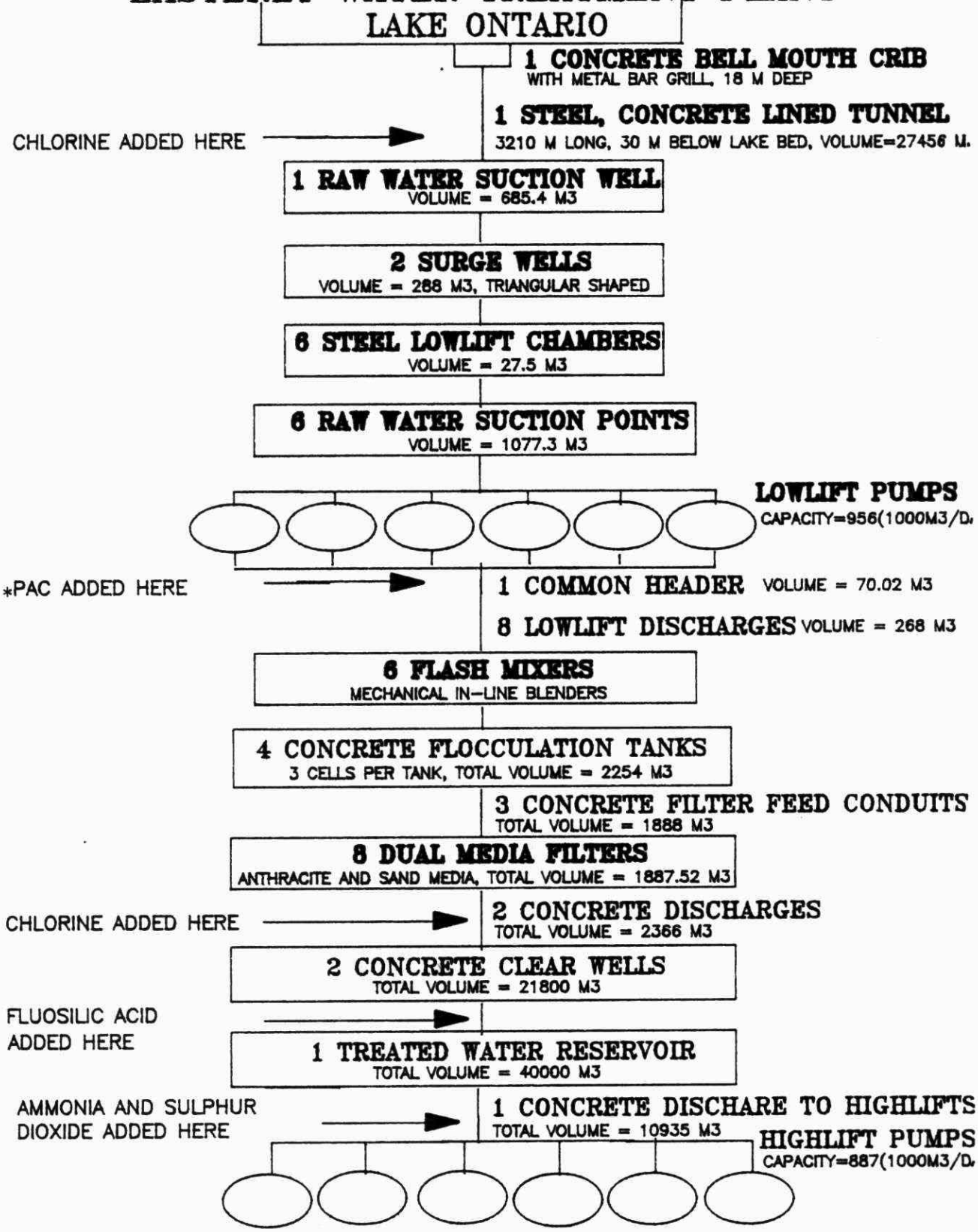


Figure 2

EASTERLY WATER TREATMENT PLANT



* Polyaluminum Chloride

TABLE 2

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

GENERAL INFORMATION

EASTERLY (TORONTO) WATER TREATMENT PLANT

LOCATION:	201 COPPERFIELD RD WEST HILL, ONTARIO M1Z 4S1 (416-281-2888)
SOURCE:	RAW WATER SOURCE - LAKE ONTARIO
RATED CAPACITY:	550 (1000 M3/DAY)
OPERATION:	MUNICIPAL
PLANT SUPERINTENDENT:	W. RIDDOCK
MINISTRY REGION:	CENTRAL
DISTRICT OFFICER:	G. McCARTY

MUNICIPALITY SERVED	POPULATION
CITY OF TORONTO	615,000
CITY OF ETOBICOKE	298,490
CITY OF NORTH YORK	556,308
CITY OF SCARBOROUGH	461,957
CITY OF YORK	133,856
BOROUGH OF EAST YORK	97,679
REGION OF YORK (SOUTH)	170,000

plant. Water was sampled through copper plumbing from the basement laundry tap.

iv) Distribution System - Site 2 - This house is approximately 5.0 kilometers from the plant. Water was sampled through copper plumbing from the basement laundry tap.

Sample lines in the plant were flushed prior to sampling to ensure that the water obtained was indicative of its origin and not residual water standing in the sample line.

At the distribution system location two types of samples were obtained: a standing and a free flow. The standing sample consisted of water that had been in the household plumbing and service connection for a minimum of six hours. These samples are used to make an assessment of the amount by which the levels of inorganic compounds and metals may be changed on standing, due to leaching from (or deposition on), the plumbing system. The only analyses carried out on these samples therefore, are General Chemistry and Metals. The free flow sample represented fresh water from the distribution main that had been flowing for five minutes before being sampled.

Attempts were made to capture the same block of water at each sampling point by taking the retention time into consideration. The retention time was calculated by dividing the volume of water between the two sampling points by the sample day flow. For example, if it was determined that the retention time within the

plant was five hours then there would be a five hour interval between the raw and treated sampling. Similarly, if it was estimated that it took approximately one day for the water to travel from the plant to the distribution system site, this site would be sampled one day after the treated water from the plant.

Stringent DWSP sampling protocols were followed to eliminate any variance (Appendix B).

Sample day flow, treatment chemical dosages and Field Chemistry measurements such as Turbidity, Chlorine Residuals, pH and Temperature were recorded on the day of sampling and were entered onto the DWSP data base as submitted.

RESULTS

The Easterly Water Treatment Plant was sampled for approximately 160 parameters on a monthly basis. Two sites from the distribution system were incorporated onto the program in July and were sampled on a monthly basis.

The Specific Pesticides and Chlorophenols scans were sampled for in June and November only. Polynuclear Aromatic Hydrocarbons and Phenolics are only analysed for in the raw and treated water at the plant.

Table 3 contains information on the sample day retention time, flow rate and treatment chemicals used and their associated

dosages.

Table 4 is a summary break-down of the number of water samples analysed for by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment (MOE) laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 presents parameters not detected.

Associated guidelines and detection limits are also supplied on both tables. Parameters are listed alphabetically within each scan.

DISCUSSION

General

Water quality is judged by comparison with the Ontario Drinking Water Objectives (ODWOs) as defined in the 1984 publication (ISBN 0-7743-8985-0). The Province of Ontario has health related and

aesthetic objectives for 49 parameters, which are currently under review. When an ODWO is not available guidelines/limits from other agencies are consulted. The Parameter Listing System (PALIS) recently initiated by the MOE catalogues and keeps current over 1750 guidelines for 650 parameters from agencies throughout the world.

As defined under Results, traces do not indicate quantifiable values, as defined by established MOE Laboratory analytical reporting protocols. While they can be useful in trend analysis or confirmation of the presence of a specific contaminant that is repeatedly detected at these levels, the occasional finding of a trace level of a contaminant is not considered to be significant. **DISCUSSION OF GUIDELINES AND LIMITS THEREFORE, IS ONLY CONDUCTED ON POSITIVE RESULTS.**

Bacteriology

Positive results for the Bacteriology scan were present thirteen times in the treated water, nine times in the distribution system Site 1 water and four times in the Site 2 water. In all cases the positive parameters were Standard Plate Count, Total Coliforms and/or Total Coliform Background. The presence/absence test determined Total Coliform bacteria to be present within 48 hours in the August sample from distribution system Site 1. The District Officer was notified. No other treated waters or distribution system samples exceeded any applicable health

related ODWOs.

Due to its sampling frequency of once per month, the DWSP is not designed to evaluate all aspects of the bacteriological quality of water. Routine bacteriological monitoring, as recommended in the ODWOs, is carried out by the operating authority. Water from the Easterly Water Treatment Plant, in terms of the limited DWSP bacteriological examination, was of consistent good quality.

Inorganic and Physical Parameters

Laboratory and Field Chemistry

The results for Laboratory Chemistry and Field Chemistry scans were below applicable ODWOs.

Turbidity in water is caused by the presence of suspended matter such as clay, silt, colloidal particles, plankton and other microscopic organisms. The most important potential health effect of Turbidity is its interference with disinfection in the treatment plant and maintenance of a chlorine residual. The ODWO of 1 Formazin Turbidity Unit (FTU) is only applicable to treated water leaving the plant.

There are ODWOs that are set for parameters which are related to aesthetic quality rather than health. One of these is Organic Nitrogen. Organic Nitrogen is calculated by subtracting the Ammonia (Ammonium Total) value from the Total Kjeldahl Nitrogen value (Nitrogen Tot Kjeld). In a number of the treated water and

distribution system water samples Organic Nitrogen values exceeded the aesthetic ODWO of 0.15 mg/l. When Organic Nitrogen exceeds 0.15 mg/l in treated water some taste and odour problems can result.

This guideline is exceeded in most supplies. Based on the information obtained from the DWSP, which generally indicates no problems with this parameter exceedence, the guideline may be modified when the ODWOs are reviewed.

Colour was above the aesthetic ODWO of 5.0 True Colour Units (TCU) for the August and November distribution system Site 1 sample with values of 5.5 and 6.0 TCU, respectively. Colour in drinking water may be due to the presence of natural or synthetic organic substances as well as certain metallic ions.
As part of the treatment plant process, fluosilic acid is added to the treated water (Table 3). Where fluoridation is practiced, the Fluoride concentration recommended in the ODWOs is 1.2 mg/L, plus or minus 0.2 mg/L. Maintenance of this level can be observed in the Fluoride levels in the treated and distribution system samples.

It is desirable that the Temperature of drinking water be less than 15°C; the palatability of water is enhanced by its coolness. A temperature below 15°C will tend to reduce the growth of nuisance organisms and hence minimize associated taste, colour, odour and corrosion problems. The desired ODWO was exceeded in many of the treated water samples.

Metals

The results reported for the Metals scan were below any applicable ODWOs.

Copper, Manganese and Iron levels were lower in the treated water as compared to the raw water. This is the result of the treatment process. The addition of polyaluminum chloride as a coagulant to the raw water (Table 3) and the resulting coagulation/settling process has been shown to reduce the levels of most metals.

Elevated levels of Iron were present in the distribution system samples as compared to the treated water leaving the plant indicating that small quantities of Iron were leached from the distribution system mains as the water travelled to each house.

Elevated levels of Copper, Iron and Zinc were detected in the standing samples as compared to the free flow distribution samples thus, indicating that small quantities of these metals were leached from the household plumbing as the water stood overnight.

At present, there is no evidence that Alumininum is physiologically harmful and no health limit has been specified. The ODWO indicates that a useful guideline is to maintain a

residual below 0.1 mg/L as Al in the water leaving the plant to avoid any post precipitation problems. The measure of residual Aluminum in the treated water is important to indicate the efficiency of the treatment process. Aluminum values exceeded the ODWO operational guideline on two occasions.

Mercury levels for all samples increased gradually from January to December. Over the past year in the DWSP program it has been discovered that potassium dichromate, used to preserve Mecury samples, has a limited shelf-life and may show false positives for the presence of Mercury. As the preservative deteriorates, Mecury levels increase due to interferences and are replaced.

Organic Parameters

Chloroaromatics

The results of the Chloroaromatics group showed that one parameter was detected:

1,2,3-Trichlorobenzene

1,2,3-Trichlorobenzene was detected at a trace level, in one treated water sample.

Review of these results, along with information from other water supplies on DWSP, would indicate that certain Chloroaromatics appear more frequently in the treated water than in the raw and almost always only at trace levels. These occurrences could possibly be due to a reaction of chlorine with organics present

in the water or the distribution system.

Chlorophenols

The results of the Chlorophenols scan showed that no Chlorophenols were detected.

Pesticides and PCB (Polychlorinated Biphenyl)

The results of the Pesticides and PCB scan showed that two pesticides were detected:

Alpha BHC

Lindane

Lindane consists of several isomers of BHC (Benzene Hexachloride). Alpha BHC is the predominant isomer found in waters from the Great Lakes Basin as indicated in results from other water supplies on DWSP.

Alpha BHC was detected at trace levels, eight times in the raw water, ten times in the treated water, two times in the distribution system Site 1 water and five times in the Site 2 water.

Lindane was detected at trace levels, three times in the raw water, four times in the treated water, once in the distribution system Site 1 water and three times in the Site 2 water.

Specific Pesticides

Results of the Specific Pesticides scan showed that none were detected.

Phenolics

Phenolics were detected at trace levels, two times in the raw water and treated water. Phenolic compounds are present in the aquatic environment as a result of natural and/or industrial processes.

Polynuclear Aromatic Hydrocarbons (PAHs)

Results of the PAH scan showed that no PAHs were detected.

Volatiles

Results of the Volatiles scan showed that four parameters, other than Trihalomethanes(THMs), were detected:

Toluene

Ethylbenzene

Meta and Para-Xylene

Ortho-Xylene

Toluene was detected at trace levels, once in the treated water and twice in the distribution system Site 1 water.

Ethylbenzene was detected at trace levels, once in the raw water, three times in the treated water and twice in the distribution system Sites 1 and 2 water.

Meta and Para-Xylene are reported as one compound, M-Xylene and were detected at a trace level, once in the treated water.

Ortho-Xylene (O-Xylene) was detected at a trace level, once in the treated water.

These volatiles are typically found on an occasional basis at other water supplies included on the DWSP usually at trace levels.

THMs are acknowledged to be produced during the water treatment process and will always occur in chlorinated surface waters. THMs are comprised mainly of Chloroform, Chlorodibromomethane and Dichlorobromomethane. Bromoform occurs occasionally. Results are reported for the individual compounds as well as for total THMs.

Chloroform, Chlorodibromomethane, Dichlorobromomethane and Total THMs were always detected in all the treated waters. Bromoform was detected at trace levels, five times in the treated water and three times in the distribution system Site 1 and 2 waters. All THM occurrences were well below the ODWO of 350 ug/L for Total THMs.

THMs were present at trace levels in one raw water sample indicating the presence of small amounts of chlorine.

Raw and treated water quality from 1986 to 1987 has remained

consistent.

CONCLUSIONS

The Easterly Water Treatment Plant for the sample year of 1987 produced good quality water at the plant and this was maintained throughout the distribution system.

No health related guidelines, for organic or inorganic parameters, were exceeded during 1986 and 1987.

RECOMMENDATIONS

Two recommendations can be made and are as follows:

1) The data base should be reviewed in consultation with Regional, Plant and DWSP personnel to determine if sampling location, sampling frequency and the number of parameters analysed could be revised to allow for a more efficient characterization of the water.

2) During 1987 one raw water sample contained very low levels of THMs. This sample site should be reassessed and possibly relocated to ensure that it meets the DWSP sampling protocol.

TABLE 3

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	SAMPLE DAY CONDITIONS		TREATMENT CHEMICAL DOSAGES (MG/L)					
			PRE-CHLORINATION	COAGULATION	POST-CHLORINATION	FLUORIDATION	DECHLORINATION	CHLORAMINATION
			CHLORINE	POLY ALUMINUM CHLORIDE	CHLORINE	FLUOSILIC ACID	SULPHUR DIOXIDE	AMMONIUM ANHYDROUS
DATE	RETENTION TIME(HRS)	FLOW (1000 M3)						
JAN 19	7.4	335.7	.80	.60	1.50	1.06	1.00	.18
FEB 16	6.4	389.0	.80	.80	1.70	1.20	.20	.24
MAR 16	6.5	380.0	.80	.60	.84	1.01	.21	.23
APR 21	6.4	389.0	.80	1.15	.77	1.12	.26	.16
MAY 19	6.5	380.0	.80	.80	1.70	1.15	.90	.17
JUN 15	6.2	401.0	.80	.70	1.80	1.09	1.30	.17
JUL 20	6.4	389.0	.80	.80	1.90	1.12	1.10	.17
AUG 17	4.8	518.0	.80	1.20	2.20	1.07	1.30	.18
SEP 22	6.5	383.2	.80	1.20	1.88	1.08	1.00	.18
OCT 20	6.4	389.0	.80	.80	.70	1.05	.26	.20
NOV 17	7.0	352.0	.80	.70	.70	1.04	.27	.20
DEC 15	7.0	356.0	.80	.60	.70	1.00	.13	.20

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN	PARAMETER	RAW WATER # ANALYSED	RAW WATER POSITIVE	RAW WATER TRACE	TREATED WATER # ANALYSED	TREATED WATER POSITIVE	TREATED WATER TRACE	SITE 1 # ANALYSED	SITE 1 POSITIVE	SITE 1 TRACE	SITE 2 # ANALYSED	SITE 2 POSITIVE	SITE 2 TRACE
BACTERIOLOGICAL	AEROMONAS SP	0	0	0	0	0	0	1	0	0	0	0	0
	COLIFORM	0	0	0	0	0	0	1	1	0	0	0	0
	ESCHERICHIA COLI BY PRESENCE/ABSENCE	0	0	0	0	0	0	1	0	0	0	0	0
	FECAL COLIFORM	0	0	0	0	0	0	1	0	0	0	0	0
	FECAL COLIFORM MEMBRANE FILTRATION	11	7	0	0	0	0	0	0	0	0	0	0
	P/A BOTTLE	0	0	0	12	0	0	6	1	0	6	0	0
	STANDARD PLATE COUNT MEMBRANE FILT.	10	10	0	12	10	0	6	5	0	6	4	0
	STAPH AUREUS	0	0	0	0	0	0	1	0	0	0	0	0
	TOTAL COLIFORM BACKGROUND MF	12	12	0	12	2	0	6	2	0	6	0	0
	TOTAL COLIFORM MEMBRANE FILTRATION	12	11	0	12	1	0	6	0	0	6	0	0
*TOTAL SCAN BACTERIOLOGICAL		45	40	0	48	13	0	29	9	0	24	4	0
*TOTAL GROUP BACTERIOLOGICAL		45	40	0	48	13	0	29	9	0	24	4	0
CHEMISTRY (FLD)	FIELD COMBINED CHLORINE RESIDUAL	0	0	0	12	12	0	11	11	0	11	11	0
	FIELD FREE CHLORINE RESIDUAL	0	0	0	0	0	0	0	0	0	1	1	0
	FIELD PH	12	12	0	12	12	0	12	12	0	11	11	0
	FIELD TEMPERATURE	12	12	0	12	12	0	12	12	0	11	11	0
	FIELD TOTAL CHLORINE RESIDUAL	0	0	0	12	12	0	11	11	0	11	11	0
	FIELD TURBIDITY	12	12	0	12	12	0	12	12	0	11	11	0
*TOTAL SCAN CHEMISTRY (FLD)		36	36	0	60	60	0	58	58	0	56	56	0
CHEMISTRY (LAB)	ALKALINITY	12	12	0	12	12	0	12	12	0	11	11	0
	AMMONIUM TOTAL	12	7	3	12	11	1	12	4	6	11	8	2

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN	PARAMETER	RAW WATER			TREATED WATER			SITE 1			SITE 2		
		# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
CHEMISTRY (LAB)	CALCIUM	12	12	0	12	12	0	12	12	0	11	11	0
	CHLORIDE	12	12	0	12	12	0	12	12	0	11	11	0
	COLOUR	12	1	9	12	0	10	12	12	0	11	1	10
	CONDUCTIVITY	12	12	0	12	12	0	12	12	0	11	11	0
	CYANIDE	9	0	0	9	0	0	6	0	0	6	0	1
	FLUORIDE	12	12	0	12	12	0	12	12	0	11	11	0
	HARDNESS	12	12	0	12	12	0	12	12	0	11	11	0
	MAGNESIUM	12	12	0	12	12	0	12	12	0	11	11	0
	NITRITE	12	5	7	12	2	9	12	7	4	11	7	4
	NITROGEN TOTAL KJELDAHL	12	12	0	12	12	0	12	12	0	11	11	0
	PH	12	12	0	12	12	0	12	12	0	11	11	0
	PHOSPHORUS FIL REACT	12	7	4	12	7	5	0	0	0	0	0	0
	PHOSPHORUS TOTAL	12	4	8	12	0	10	0	0	0	0	0	0
	SODIUM	12	12	0	12	12	0	12	12	0	11	11	0
	TOTAL NITRATES	12	12	0	12	12	0	12	12	0	11	11	0
	TOTAL SOLIDS	12	12	0	12	12	0	12	12	0	11	11	0
	TURBIDITY	12	12	0	12	10	2	12	12	0	11	10	1
*TOTAL SCAN CHEMISTRY (LAB)		225	180	31	225	174	37	198	179	10	182	158	18
METALS	ALUMINUM	12	10	0	11	11	0	12	12	0	11	11	0
	ARSENIC	12	1	0	12	3	0	12	0	0	11	2	0
	BARIUM	12	12	0	11	11	0	12	12	0	11	11	0
	BERYLLIUM	12	0	0	11	0	0	12	0	0	11	0	0
	BORON	12	5	6	12	4	7	12	0	12	11	0	11
	CADMIUM	12	0	0	11	0	0	12	0	0	11	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

		RAW WATER			TREATED WATER			SITE 1			SITE 2		
SCAN	PARAMETER	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
METALS	CHROMIUM	12	4	0	11	6	0	12	6	0	11	5	0
	COBALT	12	0	0	11	0	0	12	0	0	11	0	0
	COPPER	12	12	0	11	11	0	12	12	0	11	11	0
	CYANIDE	3	0	0	3	0	0	0	0	0	0	0	0
	IRON	12	12	0	11	6	0	12	12	0	11	11	0
	LEAD	12	2	0	11	1	0	12	5	0	11	2	0
	MANGANESE	12	12	0	11	3	0	12	12	0	11	11	0
	MERCURY	12	11	0	12	11	0	6	6	0	6	6	0
	MOLYBDENUM	12	9	0	11	9	0	12	3	0	11	8	0
	NICKEL	12	4	0	11	3	0	12	9	0	11	7	0
	SELENIUM	12	0	0	12	0	0	12	0	0	11	0	0
	STRONTIUM	12	12	0	11	11	0	12	12	0	11	11	0
	URANIUM	12	12	0	12	12	0	12	12	0	11	11	0
	VANADIUM	12	3	0	11	1	0	12	1	0	11	1	0
	ZINC	12	9	0	11	7	0	12	10	0	11	9	0
*TOTAL SCAN METALS		243	130	6	228	110	7	234	124	12	215	117	11
*TOTAL GROUP INORGANIC & PHYSICAL		504	346	37	513	344	44	490	361	22	453	331	29
CHLOROAROMATICS	123 TRICHLOROBENZENE	12	0	0	12	0	1	5	0	0	6	0	0
	1234 TETRACHLOROBENZENE	12	0	0	12	0	0	5	0	0	6	0	0
	1235 TETRACHLOROBENZENE	12	0	0	12	0	0	5	0	0	6	0	0
	124 TRICHLOROBENZENE	12	0	0	12	0	0	5	0	0	6	0	0
	1245 TETRACHLOROBENZENE	12	0	0	12	0	0	5	0	0	6	0	0
	135 TRICHLOROBENZENE	12	0	0	12	0	0	5	0	0	6	0	0
	236 TRICHLOROTOLUENE	12	0	0	12	0	0	5	0	0	6	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

		RAW WATER			TREATED WATER			SITE 1			SITE 2		
SCAN	PARAMETER	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
CHLOROAROMATICS	245 TRICHLOROTOLUENE	12	0	0	12	0	0	5	0	0	6	0	0
	26A TRICHLOROTOLUENE	12	0	0	12	0	0	5	0	0	6	0	0
	HEXACHLOROBUTADIENE	12	0	0	12	0	0	5	0	0	6	0	0
	HEXACHLOROETHANE	12	0	0	12	0	0	5	0	0	6	0	0
	OCTACHLOROSTYRENE	12	0	0	12	0	0	5	0	0	6	0	0
	PENTACHLOROBENZENE	12	0	0	12	0	0	5	0	0	6	0	0
*TOTAL SCAN CHLOROAROMATICS		156	0	0	156	0	1	65	0	0	78	0	0
CHLOROPHENOLS	234 TRICHLOROPHENOL	2	0	0	2	0	0	0	0	0	0	0	0
	2345 TETRACHLOROPHENOL	2	0	0	2	0	0	0	0	0	0	0	0
	2356 TETRACHLOROPHENOL	2	0	0	2	0	0	0	0	0	0	0	0
	245-TRICHLOROPHENOL	2	0	0	2	0	0	0	0	0	0	0	0
	246-TRICHLOROPHENOL	2	0	0	2	0	0	0	0	0	0	0	0
	PENTACHLOROPHENOL	2	0	0	2	0	0	0	0	0	0	0	0
*TOTAL SCAN CHLOROPHENOLS		12	0	0	12	0	0	0	0	0	0	0	0
PAH	ANTHANTHRENE	0	0	0	0	0	0	0	0	0	0	0	0
	ANTHRACENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO(A) ANTHRACENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO (A) PYRENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO(B) CHRYSENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO(B) FLUORANTHENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO(E)PYRENE	3	0	0	3	0	0	0	0	0	0	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

		RAW WATER			TREATED WATER			SITE 1			SITE 2		
SCAN	PARAMETER	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
PAH	BENZO(G,H,I) PERYLENE	3	0	0	3	0	0	0	0	0	0	0	0
	BENZO(J) FLUORANTHENE	0	0	0	1	0	0	0	0	0	0	0	0
	BENZO(K) FLUORANTHENE	3	0	0	3	0	0	0	0	0	0	0	0
	CHRYSENE	3	0	0	3	0	0	0	0	0	0	0	0
	CORONENE	3	0	0	3	0	0	0	0	0	0	0	0
	DIBENZO(A,H) ANTHRACENE	3	0	0	3	0	0	0	0	0	0	0	0
	DIMETHYL BENZO(A) ANTHRACENE	3	0	0	2	0	0	0	0	0	0	0	0
	FLUORANTHENE	3	0	0	3	0	0	0	0	0	0	0	0
	INDENO(1,2,3-C,D) PYRENE	3	0	0	3	0	0	0	0	0	0	0	0
	PERYLENE	3	0	0	3	0	0	0	0	0	0	0	0
	PHENANTHRENE	3	0	0	3	0	0	0	0	0	0	0	0
	PYRENE	3	0	0	3	0	0	0	0	0	0	0	0
*TOTAL SCAN PAH		51	0	0	51	0	0	0	0	0	0	0	0
PESTICIDES & PCB	ALACHLOR	11	0	0	11	0	0	5	0	0	5	0	0
	ALDRIN	12	0	0	12	0	0	5	0	0	6	0	0
	ALPHA BHC	12	0	8	12	0	10	5	0	2	6	0	5
	ALPHA CHLORDANE	12	0	0	12	0	0	5	0	0	6	0	0
	ATRATONE	11	0	0	11	0	0	5	0	0	5	0	0
	BETA BHC	12	0	0	12	0	0	5	0	0	6	0	0
	DICHLORODIPHENYLDICHLOROETHANE	12	0	0	12	0	0	5	0	0	6	0	0
	DIELDRIN	12	0	0	12	0	0	5	0	0	6	0	0
	ENDRIN	12	0	0	12	0	0	5	0	0	6	0	0
	ETHLYENE DIBROMIDE	9	0	0	9	0	0	6	0	0	6	0	0
	GAMMA CHLORDANE	12	0	0	12	0	0	5	0	0	6	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

		RAW WATER			TREATED WATER			SITE 1			SITE 2		
SCAN	PARAMETER	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
PESTICIDES & PCB	HEPTACHLOR	12	0	0	12	0	0	5	0	0	6	0	0
	HEPTACHLOR EPOXIDE	12	0	0	12	0	0	5	0	0	6	0	0
	HEXACHLOROBENZENE	12	0	0	12	0	0	5	0	0	6	0	0
	LINDANE	12	0	3	12	0	4	5	0	1	6	0	3
	METHOXYCHLOR	12	0	0	12	0	0	5	0	0	6	0	0
	MIREX	12	0	0	12	0	0	5	0	0	6	0	0
	O,P-DDT	12	0	0	12	0	0	5	0	0	6	0	0
	OXYCHLORDANE	12	0	0	12	0	0	5	0	0	6	0	0
	PCB	12	0	0	12	0	0	5	0	0	6	0	0
	PPDDE	12	0	0	12	0	0	5	0	0	6	0	0
	PPDDT	12	0	0	12	0	0	5	0	0	6	0	0
	THIODAN I	12	0	0	12	0	0	5	0	0	6	0	0
	THIODAN II	12	0	0	12	0	0	5	0	0	6	0	0
	THIODAN SULPHATE	12	0	0	12	0	0	5	0	0	6	0	0
*TOTAL SCAN PESTICIDES & PCB		295	0	11	295	0	14	126	0	3	148	0	8
PHENOLICS		12	0	2	12	0	2	0	0	0	0	0	0
*TOTAL SCAN PHENOLICS		12	0	2	12	0	2	0	0	0	0	0	0
SPECIFIC PESTICIDES		2	0	0	2	0	0	0	0	0	0	0	0
	2,4 D PROPIONIC ACID	2	0	0	2	0	0	0	0	0	0	0	0
	2,4,5-T	2	0	0	2	0	0	0	0	0	0	0	0
	2,4-D	2	0	0	2	0	0	0	0	0	0	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

		RAW WATER			TREATED WATER			SITE 1			SITE 2		
SCAN	PARAMETER	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
SPECIFIC PESTICIDES	24-DICHLORORPHENOXYBUTYRIC	2	0	0	2	0	0	0	0	0	0	0	0
	AMETRYNE	11	0	0	11	0	0	5	0	0	5	0	0
	AMINOCARB	0	0	0	0	0	0	0	0	0	0	0	0
	ATRAZINE	11	0	0	11	0	0	5	0	0	5	0	0
	BENOMYL	0	0	0	0	0	0	0	0	0	0	0	0
	BLADEX	11	0	0	11	0	0	5	0	0	5	0	0
	BUX (METALKAMATE)	2	0	0	2	0	0	0	0	0	0	0	0
	CARBOFURAN	2	0	0	2	0	0	0	0	0	0	0	0
	DIALLATE	2	0	0	2	0	0	0	0	0	0	0	0
	DIAZINON	2	0	0	2	0	0	0	0	0	0	0	0
	DICAMBA	2	0	0	2	0	0	0	0	0	0	0	0
	DICHLOROVOS	2	0	0	2	0	0	0	0	0	0	0	0
	DURSBAN	2	0	0	2	0	0	0	0	0	0	0	0
	EPTAM	2	0	0	2	0	0	0	0	0	0	0	0
	ETHION	2	0	0	2	0	0	0	0	0	0	0	0
	GUTHION	0	0	0	0	0	0	0	0	0	0	0	0
	IPC	2	0	0	2	0	0	0	0	0	0	0	0
	MALATHION	2	0	0	2	0	0	0	0	0	0	0	0
	METHYL PARATHION	2	0	0	2	0	0	0	0	0	0	0	0
	METHYLTRITHION	2	0	0	2	0	0	0	0	0	0	0	0
	METOLACHLOR	11	0	0	11	0	0	5	0	0	5	0	0
	MEVINPHOS	2	0	0	2	0	0	0	0	0	0	0	0
	PARATHION	2	0	0	2	0	0	0	0	0	0	0	0
	PHORATE (THIMET)	2	0	0	2	0	0	0	0	0	0	0	0
	PICHLORAM	0	0	0	0	0	0	0	0	0	0	0	0
	PROMETONE	11	0	0	11	0	0	5	0	0	5	0	0
	PROMETRYNE	11	0	0	11	0	0	5	0	0	5	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

SCAN	PARAMETER	RAW WATER # ANALYSED	RAW WATER POSITIVE	RAW WATER TRACE	TREATED WATER # ANALYSED	TREATED WATER POSITIVE	TREATED WATER TRACE	SITE 1 # ANALYSED	SITE 1 POSITIVE	SITE 1 TRACE	SITE 2 # ANALYSED	SITE 2 POSITIVE	SITE 2 TRACE
SPECIFIC PESTICIDES	PROPAZINE	11	0	0	11	0	0	5	0	0	5	0	0
	PROPOXUR	2	0	0	2	0	0	0	0	0	0	0	0
	RELDAN	2	0	0	2	0	0	0	0	0	0	0	0
	RONNEL	2	0	0	2	0	0	0	0	0	0	0	0
	SENCOR	11	0	0	11	0	0	5	0	0	5	0	0
	SEVIN (CARBARYL)	2	0	0	2	0	0	0	0	0	0	0	0
	SILVEX	2	0	0	2	0	0	0	0	0	0	0	0
	SIMAZINE	11	0	0	11	0	0	5	0	0	5	0	0
	SUTAN (BUTYLATE)	2	0	0	2	0	0	0	0	0	0	0	0
	TOXAPHENE	0	0	0	0	0	0	0	0	0	0	0	0
*TOTAL SCAN SPECIFIC PESTICIDES		153	0	0	153	0	0	45	0	0	45	0	0
VOLATILES	1,1 DICHLOROETHANE	12	0	0	12	0	0	6	0	0	6	0	0
	1,1 DICHLOROETHYLENE	12	0	0	12	0	0	6	0	0	6	0	0
	1,2 DICHLOROBENZENE	12	0	0	12	0	0	6	0	0	6	0	0
	1,2 DICHLOROETHANE	12	0	0	12	0	0	6	0	0	6	0	0
	1,2 DICHLOROPROPANE	12	0	0	12	0	0	6	0	0	6	0	0
	1,3 DICHLOROBENZENE	12	0	0	12	0	0	6	0	0	6	0	0
	1,4 DICHLOROBENZENE	12	0	0	12	0	0	6	0	0	6	0	0
	111, TRICHLOROETHANE	12	0	0	12	0	0	6	0	0	6	0	0
	112 TRICHLOROETHANE	12	0	0	12	0	0	6	0	0	6	0	0
	1122 TETRA-CHLOROETHANE	12	0	0	12	0	0	6	0	0	6	0	0
	BENZENE	12	0	0	12	0	0	6	0	0	6	0	0
	BROMOFORM	12	0	0	12	0	5	6	0	3	6	0	3
	CARBON TETRACHLORIDE	12	0	0	12	0	0	6	0	0	6	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT

SUMMARY TABLE OF RESULTS (1987)

		RAW WATER			TREATED WATER			SITE 1			SITE 2		
SCAN	PARAMETER	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE	# ANALYSED	POSITIVE	TRACE
VOLATILES	CHLOROBENZENE	12	0	0	12	0	0	6	0	0	6	0	0
	CHLORODIBROMOMETHANE	12	0	0	12	12	0	6	6	0	6	6	0
	CHLOROFORM	12	0	1	12	12	0	6	6	0	6	6	0
	DICHLOROBROMOMETHANE	12	0	0	12	12	0	6	6	0	6	6	0
	ETHLYENE DIBROMIDE	3	0	0	3	0	0	0	0	0	0	0	0
	ETHYLBENZENE	12	0	1	12	0	3	6	0	2	6	0	2
	M-XYLENE	12	0	0	12	0	1	6	0	0	6	0	0
	METHYLENE CHLORIDE	12	0	0	10	0	0	6	0	0	5	0	0
	O-XYLENE	12	0	0	12	0	1	6	0	0	6	0	0
	P-XYLENE	12	0	0	12	0	0	6	0	0	6	0	0
	TETRACHLOROETHYLENE	12	0	0	12	0	0	6	0	0	6	0	0
	TOLUENE	12	0	0	12	0	1	6	0	2	6	0	0
	TOTAL TRIHALOMETHANES	12	1	0	12	12	0	6	6	0	6	6	0
	TRANS 1,2 DICHLOROETHYLENE	12	0	0	12	0	0	6	0	0	6	0	0
	TRICHLOROETHYLENE	12	0	0	12	0	0	6	0	0	6	0	0
	TRIFLUOROCHLOROTOLUENE	12	0	0	12	0	0	6	0	0	6	0	0
*TOTAL SCAN VOLATILES		339	1	2	337	48	11	168	24	7	167	24	5
*TOTAL GROUP ORGANIC		1018	1	15	1016	48	28	404	24	10	438	24	13
TOTAL		1567	387	52	1577	405	72	923	394	32	915	359	42

KEY TO TABLES 5 AND 6

A ONTARIO DRINKING WATER OBJECTIVES
1. Maximum Acceptable Concentration (MAC)
1+. MAC for Total Trihalomethanes
1*. MAC for Bacteriological Analyses
Poor water quality is indicated when :
- total coliform counts > 0 < 5
- P/A Bottle Test is present after 48 hours
- Aeromonas organisms are detected in more than 25% of samples in a single submission or in successive submissions from the same sampling site
- Pseudomonas Aeruginosa, Staphylococcus Aureus and members of the Fecal Streptococcus group should not be detected in any sample
- Standard Plate Count should not exceed 500 organisms per ml at 35 deg C within 48 hours

2. Interim Maximum Acceptable Concentration (IMAC)
3. Maximum Desirable Concentration (MDC)
4. Aesthetic or Recommended Operational Guideline
- hardness levels between 80 and 100 mg/L as calcium carbonate are considered to provide an acceptable balance between corrosion and incrustation, water supplies with a hardness >200 mg/L are considered poor and those in excess of 500 mg/L are unacceptable.

B HEALTH & WELFARE CANADA
1. Maximum Acceptable Concentration (MAC)
2. Proposed MAC
3. Interim MAC

C WORLD HEALTH ORGANIZATION
1. Guideline Value (GV)
2. Tentative GV
3. Aesthetic GV

D US ENVIRONMENTAL PROTECTION AGENCY (EPA)
1. Maximum Contaminant Level (MCL)
2. Suggested No-Adverse Effect Level (SNAEL)
3. Lifetime Health Advisory
4. EPA Ambient Water Quality Criteria

F EUROPEAN ECONOMIC COMMUNITY (EEC)
1. Health Related Guideline Level
2. Aesthetic Guideline Level
3. Maximum Admissable Concentration (MADC)

G CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE

H USSR MAXIMUM PERMISSIBLE CONCENTRATION

I NEW YORK STATE AMBIENT WATER GUIDELINE

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurable Amount
<T	Greater Than Detection Limit But Not Confident
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!AW	No Data: Analysis Withdrawn
!CR	No Data: Could Not Confirm By Reanalysis
!CS	No Data: Contamination Suspected
!IL	No Data: Sample Incorrectly Labelled
!IS	No Data: Insufficient Sample
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded
!NA	No Data: No Authorization To Perform Reanalysis
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!PE	No Data: Procedural Error - Sample Discarded
!PH	No Data: Sample pH Outside Valid Range
!RO	No Data: See Attached Report (no numeric results)
!SM	No Data: Sample Missing
!SS	No Data: Send Separate Sample Properly Preserved
!UI	No Data: Indeterminant Interference
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only
PPS	Test Performed On Preserved Sample

RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant
UAL	Unreliable: Sample Age Exceeds Normal Limit
UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
UIN	Unreliable: Indeterminant Interference
XP	Positive After X Number of Hours

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
BACTERIOLOGICAL						
AEROMONAS SP (0=ABSENT)			DET'N LIMIT = N/A	GUIDELINE = 0 (A1)		
AUG	.	.	.	0	.	.
E. COLI (P/A) (0=ABSENT)			DET'N LIMIT = N/A	GUIDELINE =		
AUG	.	.	.	0	.	.
FECAL COLIFORM MF (CT/100ML)			DET'N LIMIT = 0	GUIDELINE = 0 (A1)		
JAN	1	.	.	.	.	.
FEB	1	.	.	.	.	.
MAR	0	.	.	.	.	.
APR	1	.	.	.	.	.
MAY	0	.	.	.	.	.
JUN	0	.	.	.	.	.
JUL	!LA	.	.	.	.	.
AUG	1	.	.	.	.	.
SEP	4	.	.	.	.	.
OCT	2	.	.	.	.	.
NOV	0	.	.	.	.	.
DEC	14	.	.	.	.	.
FECAL COLIFORM (0=ABSENT)			DET'N LIMIT = N/A	GUIDELINE = 0 (A1)		
AUG	.	.	.	0	.	.
STANDRD PLATE CNT MF (CT/ML)			DET'N LIMIT = 0	GUIDELINE = 500/ML (A1)		
JAN	28	0	.	.	.	.
FEB	15	11	.	.	.	.
MAR	34	2	.	.	.	.
APR	73	1	.	.	.	.
MAY	280	11	.	.	.	.
JUN	440	1	.	.	.	.
JUL	!OP	53	.	5	.	0
AUG	!OP	7	.	74	.	0
SEP	2300	6	.	14	.	8
OCT	34	0	.	0	.	1
NOV	44	1	.	7	.	3
DEC	89	580	.	3	.	12
P/A BOTTLE (0=ABSENT)			DET'N LIMIT = 0	GUIDELINE = 0 (A1*)		
JAN	.	0	.	.	.	.
FEB	.	0	.	.	.	.
MAR	.	0	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
APR	.	0	.	.	.	.
MAY	.	0	.	.	.	.
JUN	.	0	.	.	.	.
JUL	.	0	.	0	.	0
AUG	.	0	.	1	.	0
SEP	.	0	.	0	.	0
OCT	.	0	.	0	.	0
NOV	.	0	.	0	.	0
DEC	.	0	.	0	.	0
STAPH AUREUS (0=ABSENT)			DET'N LIMIT = N/A	GUIDELINE = 0 (A1)		
AUG	.	.	.	0	.	.
COLIFORM (0=ABSENT)			DET'N LIMIT = N/A	GUIDELINE = 0 (A1)		
AUG	.	.	.	1	.	.
TOTAL COLIFORM MF (CT/100ML)			DET'N LIMIT = 0	GUIDELINE = 5/100ML(A1)		
JAN	90	0	.	.	.	.
FEB	3	0	.	.	.	.
MAR	11	0	.	.	.	.
APR	1	0	.	.	.	.
MAY	6	0	.	.	.	.
JUN	BDL	0	.	.	.	.
JUL	115 A3C	0	.	0	.	0
AUG	94 A3C	1	.	0	.	0
SEP	16 A3C	0	.	0	.	0
OCT	7	0	.	0	.	0
NOV	38	0	.	0	.	0
DEC	74	0	.	0	.	0
T COLIFORM BCKGRD MF (CT/100ML)			DET'N LIMIT = 0	GUIDELINE = N/A		
JAN	130	0	.	.	.	.
FEB	117	0	.	.	.	.
MAR	33	0	.	.	.	.
APR	6	0	.	.	.	.
MAY	124	0	.	.	.	.
JUN	360	1	.	.	.	.
JUL	410	0	.	1	.	0
AUG	1600	0	.	0	.	0
SEP	900	0	.	1	.	0
OCT	56	0	.	0	.	0
NOV	132	0	.	0	.	0
DEC	440	1	.	0	.	0

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
CHEMISTRY (FLD)						
FLD CHLORINE (COMB) (MG/L)			DET'N LIMIT = N/A	GUIDELINE =	N/A	
JAN	.	.850	.	.	.	.
FEB	.	.550	.	.	.	.
MAR	.	.680	.	.	.	.
APR	.	.600	.	.	.	.
MAY	.	.730	.	.	.	.
JUN	.	.600	.	.	.	.
JUL	.	.600	.050	.160	.400	.600
AUG	.	.950	.	.070	.150	.400
SEP	.	.650	.100	.100	.200	.300
OCT	.	.950	.050	.130	.600	.600
NOV	.	.550	.080	.100	.200	.250
DEC	.	.740	.100	.330	.	.650
FLD CHLORINE FREE (MG/L)			DET'N LIMIT = N/A	GUIDELINE =	N/A	
AUG	.	.	.	.	.050	.
TOTAL CHLORINE (MG/L)			DET'N LIMIT = N/A	GUIDELINE =	N/A	
JAN	.	.850	.	.	.	.
FEB	.	.550	.	.	.	.
MAR	.	.680	.	.	.	.
APR	.	.600	.	.	.	.
MAY	.	.730	.	.	.	.
JUN	.	.600	.	.	.	.
JUL	.	.600	.050	.160	.400	.600
AUG	.	.950	.	.070	.200	.400
SEP	.	.650	.100	.100	.200	.300
OCT	.	.950	.050	.130	.600	.600
NOV	.	.550	.080	.100	.200	.250
DEC	.	.740	.100	.330	.	.650
FLD PH (DMSNLESS)			DET'N LIMIT = N/A	GUIDELINE = 6.5-8.5 (A4)		
JAN	8.090	7.540	.	.	.	.
FEB	8.000	7.370	.	.	.	.
MAR	8.260	7.720	.	.	.	.
APR	8.310	7.670	.	.	.	.
MAY	8.280	7.600	.	.	.	.
JUN	8.050	7.410	.	.	.	.
JUL	8.100	7.300	7.450	7.370	7.440	7.400
AUG	8.240	7.460	7.600	7.520	7.470	7.390
SEP	8.270	7.730	7.560	7.530	7.700	7.600
OCT	7.970	7.520	7.620	7.570	7.640	7.560
NOV	7.920	7.610	7.730	7.640	7.520	7.540

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE			SITE 1		SITE 2	
TYPE	RAW	TREATED	STANDING	FREE FLOW	STANDING	FREE FLOW
DEC	7.940	7.640	7.700	7.710	.	7.630
TEMPERATURE (DEG.C)			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	4.200	3.700	.	.	.	.
FEB	3.400	3.200	.	.	.	.
MAR	2.300	2.300	.	.	.	.
APR	5.400	5.000	.	.	.	.
MAY	8.100	7.300	.	.	.	.
JUN	5.900	6.100	.	.	.	.
JUL	11.100	10.400	20.700	18.500	17.200	14.000
AUG	20.900	20.900	21.700	20.800	20.000	20.000
SEP	16.200	18.500	20.000	18.000	19.000	18.000
OCT	10.000	10.100	19.000	16.000	17.000	13.000
NOV	5.400	5.500	19.000	15.000	15.000	9.500
DEC	4.700	4.800	17.000	11.000	.	9.000
FLD TURBIDITY (FTU)			DET'N LIMIT = N/A		GUIDELINE = 1.0 (A1)	
JAN	1.400	.180	.	.	.	.
FEB	2.300	.230	.	.	.	.
MAR	1.000	.240	.	.	.	.
APR	1.250	.280	.	.	.	.
MAY	.850	.230	.	.	.	.
JUN	.780	.150	.	.	.	.
JUL	1.050	.340	.830	.630	1.000	.290
AUG	1.100	.200	.920	1.000	.340	.240
SEP	.740	.280	.630	.610	.440	.420
OCT	.780	.210	1.300	.800	.320	.360
NOV	.720	.130	.580	1.000	.250	.220
DEC	.740	.170	.500	.830	.	.260

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE						
	RAW	TREATED	SITE 1		SITE 2	
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW
CHEMISTRY (LAB)						
ALKALINITY (MG/L)			DET'N LIMIT = .200		GUIDELINE = 30-500 (A4)	
JAN	100.200	95.600	.	.	.	.
FEB	99.600	92.400	.	.	.	.
MAR	100.800	96.300	.	.	.	.
APR	99.900	94.100	.	.	.	.
MAY	98.000	91.300	.	.	.	.
JUN	100.100	91.200	.	.	.	.
JUL	101.000	92.900	95.900	93.600	92.200	92.300
AUG	94.900	86.700	87.200	88.000	86.800	87.000
SEP	94.700	87.100	86.500	86.600	86.900	85.100
OCT	98.900	93.900	93.800	93.600	93.400	93.500
NOV	99.900	94.700	96.000	95.200	94.500	96.100
DEC	102.000	96.200	97.700	97.900	.	97.500
CALCIUM (MG/L)			DET'N LIMIT = .100		GUIDELINE = 100. (F2)	
JAN	41.200	41.700	.	.	.	.
FEB	39.400	41.100	.	.	.	.
MAR	40.300	39.500	.	.	.	.
APR	40.800	38.600	.	.	.	.
MAY	40.400	41.200	.	.	.	.
JUN	38.800	39.200	.	.	.	.
JUL	40.800	41.400	41.000	41.800	40.800	40.800
AUG	37.600	37.400	38.800	38.600	37.600	38.000
SEP	37.800	37.600	37.800	38.200	38.200	37.800
OCT	39.600	40.400	40.600	40.400	40.000	40.400
NOV	40.400	40.200	41.000	42.200	41.800	41.000
DEC	40.300	39.300	39.700	39.200	.	39.800
CYANIDE (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = .200 (A1)	
APR	BDL	BDL	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	BDL	BDL	.	BDL	.	BDL
SEP	BDL	BDL	.	BDL	.	.003 <T
OCT	BDL	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	BDL	.	BDL
CHLORIDE (MG/L)			DET'N LIMIT = .200		GUIDELINE = 250.0 (A3)	
JAN	25.500	27.500	.	.	.	.
FEB	25.000	27.500	.	.	.	.
MAR	22.500	24.000	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE			SITE 1		SITE 2	
TYPE	RAW	TREATED	STANDING	FREE FLOW	STANDING	FREE FLOW
APR	24.500	26.000	.	.	.	.
MAY	24.000	27.000	.	.	.	.
JUN	24.000	27.500	.	.	.	.
JUL	24.000	27.000	27.000	27.500	27.000	27.000
AUG	23.500	27.000	27.000	27.000	27.500	27.000
SEP	22.500	25.500	25.500	25.500	25.500	25.500
OCT	23.300	25.000	24.900	25.000	24.900	24.800
NOV	23.400	25.100	24.900	24.900	25.100	25.100
DEC	23.500	25.700	25.300	25.300	.	25.100
COLOUR (TCU)			DET'N LIMIT = .5		GUIDELINE = 5.0 (A3)	
JAN	2.000 <T	1.500 <T	.	.	.	.
FEB	1.500 <T	1.500 <T	.	.	.	.
MAR	1.000 <T	1.000 <T	.	.	.	.
APR	2.000 <T	1.000 <T	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	2.500	.500 <T	5.000	4.000	2.500	1.500 <T
AUG	1.500 <T	.500 <T	4.500	5.500	1.500 <T	1.000 <T
SEP	1.500 <T	.500 <T	3.000	4.000	2.000 <T	2.000 <T
OCT	1.500 <T	.500 <T	4.000	4.000	1.500 <T	1.500 <T
NOV	1.500 <T	1.000 <T	4.500	6.000	1.500 <T	1.500 <T
DEC	2.000 <T	1.000 <T	3.500	3.500	.	1.000 <T
CONDUCTIVITY (UMHO/CM)			DET'N LIMIT = 1		GUIDELINE = 400. (F2)	
JAN	333	337	.	.	.	.
FEB	329	337	.	.	.	.
MAR	332	336	.	.	.	.
APR	332	334	.	.	.	.
MAY	328	335	.	.	.	.
JUN	326	333	.	.	.	.
JUL	327	334	337	336	333	333
AUG	311	319	320	323	322	321
SEP	307	313	317	315	314	313
OCT	321	327	327	325	325	325
NOV	326	330	332	329	329	328
DEC	327	330	332	333	.	333
FLUORIDE (MG/L)			DET'N LIMIT = .01		GUIDELINE = 2.400 (A1)	
JAN	.140	1.290	.	.	.	.
FEB	.160	1.250	.	.	.	.
MAR	.150	1.240	.	.	.	.
APR	.140	1.210	.	.	.	.
MAY	.150	1.160	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JUN	.140	1.470	.	.	.	.
JUL	.160	1.430	1.410	1.380	1.410	1.360
AUG	.150	1.220	.980	1.250	1.270	1.280
SEP	.120	1.240	1.240	1.240	1.240	1.260
OCT	.120	1.320	1.300	1.280	1.280	1.220
NOV	.120	1.280	1.260	1.200	1.260	1.260
DEC	.140	1.180	1.200	1.200	.	1.180
HARDNESS (MG/L)			DET'N LIMIT = .500		GUIDELINE = 80-100 (A4)	
JAN	135.500	136.500	.	.	.	.
FEB	134.000	137.500	.	.	.	.
MAR	134.000	132.000	.	.	.	.
APR	136.500	130.000	.	.	.	.
MAY	134.000	136.000	.	.	.	.
JUN	131.000	132.000	.	.	.	.
JUL	137.000	138.000	136.000	139.000	136.000	137.000
AUG	128.000	127.000	132.000	130.000	128.000	130.000
SEP	130.000	129.000	130.000	130.000	130.000	130.000
OCT	135.000	136.000	136.000	136.000	136.000	136.000
NOV	135.000	135.000	137.000	140.000	139.000	138.000
DEC	136.000	133.000	134.000	133.000	.	134.000
MAGNESIUM (MG/L)			DET'N LIMIT = .050		GUIDELINE = 30. (F2)	
JAN	7.900	7.850	.	.	.	.
FEB	8.700	8.400	.	.	.	.
MAR	8.200	8.100	.	.	.	.
APR	8.300	8.100	.	.	.	.
MAY	8.000	8.200	.	.	.	.
JUN	8.200	8.300	.	.	.	.
JUL	8.500	8.500	8.200	8.300	8.400	8.500
AUG	8.300	8.200	8.500	8.200	8.400	8.400
SEP	8.500	8.600	8.500	8.500	8.500	8.600
OCT	8.700	8.500	8.400	8.500	8.700	8.500
NOV	8.300	8.400	8.300	8.300	8.400	8.700
DEC	8.450	8.400	8.400	8.400	.	8.450
SODIUM (MG/L)			DET'N LIMIT = .200		GUIDELINE = 200. (C3)	
JAN	13.100	13.800	.	.	.	.
FEB	13.800	13.700	.	.	.	.
MAR	12.200	11.900	.	.	.	.
APR	12.200	12.500	.	.	.	.
MAY	12.800	12.800	.	.	.	.
JUN	13.400	12.400	.	.	.	.
JUL	12.600	12.400	12.400	12.200	12.400	12.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE	RAW	TREATED	SITE 1		SITE 2	
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW
AUG	11.600	11.600	12.400	12.600	12.400	12.200
SEP	11.800	11.800	12.000	12.000	12.000	11.800
OCT	12.400	12.600	12.400	12.400	12.600	12.400
NOV	12.400	12.400	12.200	12.400	12.800	12.800
DEC	12.300	12.400	12.400	12.100	.	12.600
AMMONIUM TOTAL (MG/L)			DET'N LIMIT = 0.002		GUIDELINE = .05 (F2)	
JAN	.006 <T	.156	.	.	.	.
FEB	BDL	.166	.	.	.	.
MAR	.034	.210	.	.	.	.
APR	.028	.124	.	.	.	.
MAY	.040	.186	.	.	.	.
JUN	.036	.006 <T	.	.	.	.
JUL	.026	.154	.008 <T	.004 <T	.002 <T	.122
AUG	BDL	.136	.024	.010	BDL	.072
SEP	.034	.142	.008 <T	.008 <T	.014	.012
OCT	.006 <T	.154	BDL	BDL	.028	.126
NOV	.002 <T	.042	.002 <T	.002 <T	.004 <T	.012
DEC	.012	.122	.068	.044	.	.132
NITRITE (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = 1.000 (A1)	
JAN	.002 <T	BDL	.	.	.	.
FEB	.002 <T	.001 <T	.	.	.	.
MAR	.006	.005	.	.	.	.
APR	.002 <T	.001 <T	.	.	.	.
MAY	.003 <T	.001 <T	.	.	.	.
JUN	.010	.002 <T	.	.	.	.
JUL	.009	.003 <T	.116	.071	.133	.006
AUG	.053	.012	.009	BDL	.141	.060
SEP	.009	.003 <T	.004 <T	.003 <T	.106	.118
OCT	.002 <T	.001 <T	.083	.078	.097	.004 <T
NOV	.001 <T	.001 <T	.002 <T	.003 <T	.002 <T	.002 <T
DEC	.001 <T	.001 <T	.029	.055	.	.002 <T
TOTAL NITRATES (MG/L)			DET'N LIMIT = .020		GUIDELINE = 10.000 (A1)	
JAN	.430	.465	.	.	.	.
FEB	.430	.410	.	.	.	.
MAR	.345	.360	.	.	.	.
APR	.330	.335	.	.	.	.
MAY	.350	.350	.	.	.	.
JUN	.370	.365	.	.	.	.
JUL	.335	.340	.475	.480	.450	.330
AUG	.185	.175	.335	.330	.315	.260
SEP	.155	.170	.295	.285	.275	.275

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE			SITE 1		SITE 2	
TYPE	RAW	TREATED	STANDING	FREE FLOW	STANDING	FREE FLOW
OCT	.305	.310	.430	.435	.405	.315
NOV	.430	.440	.440	.430	.425	.435
DEC	.435	.440	.495	.460	.	.390
NITROGEN TOT KJELD (MG/L)			DET'N LIMIT = .020		GUIDELINE = N/A	
JAN	.160	.200	.	.	.	.
FEB	.230	.350	.	.	.	.
MAR	.270	.440	.	.	.	.
APR	.260	.280	.	.	.	.
MAY	.210	.310	.	.	.	.
JUN	.190	.130	.	.	.	.
JUL	.300	.190	.150	.200	.270	.270
AUG	.190	.320	.170	.160	.210	.200
SEP	.230	.330	.200	.180	.210	.210
OCT	.210	.310	.200	.200	.280	.290
NOV	.190	.200	.160	.160	.230	.170
DEC	.190	.260	.210	.230	.	.270
PH (DMSNLESS)			DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)	
JAN	8.280	8.030	.	.	.	.
FEB	8.140	7.850	.	.	.	.
MAR	8.320	8.130	.	.	.	.
APR	8.350	8.110	.	.	.	.
MAY	8.300	7.900	.	.	.	.
JUN	8.380	8.050	.	.	.	.
JUL	8.250	7.940	8.040	8.040	7.980	7.950
AUG	8.300	7.910	7.930	7.900	7.870	7.820
SEP	8.390	8.160	8.220	8.180	8.130	8.120
OCT	8.250	8.040	8.060	8.060	8.110	8.050
NOV	8.230	8.200	8.180	8.230	8.220	8.160
DEC	8.380	8.310	8.270	8.250	.	8.320
PHOSPHORUS FIL REACT (MG/L)			DET'N LIMIT = .5UG/L		GUIDELINE = N/A	
JAN	.004	.005	.	.	.	.
FEB	.008	.003	.	.	.	.
MAR	.000 <T	.001 <T	.	.	.	.
APR	.001 <T	.001 <T	.	.	.	.
MAY	.005	.002	.	.	.	.
JUN	.003	.001 <T	.	.	.	.
JUL	.000 <T	.003	.	.	.	.
AUG	.001 <T	.002	.	.	.	.
SEP	.002	.001 <T	.	.	.	.
OCT	BDL	.000 <T	.	.	.	.
NOV	.003	.003	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE						
	RAW	TREATED	SITE 1		SITE 2	
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW
DEC	.004	.003	.	.	.	.
PHOSPHORUS TTL-UNFIL (MG/L)		DET'N LIMIT = .002		GUIDELINE = .40 (F2)		
JAN	.008 <T	.004 <T	.	.	.	.
FEB	.019	.008 <T	.	.	.	.
MAR	.010	.005 <T	.	.	.	.
APR	.008 <T	.005 <T	.	.	.	.
MAY	.009 <T	.004 <T	.	.	.	.
JUN	.008 <T	BDL	.	.	.	.
JUL	.010	.006 <T	.	.	.	.
AUG	.007 <T	.005 <T	.	.	.	.
SEP	.010	.008 <T	.	.	.	.
OCT	.008 <T	.005 <T	.	.	.	.
NOV	.006 <T	BDL	.	.	.	.
DEC	.008 <T	.004 <T	.	.	.	.
RESIDUE (TOTAL) (MG/L)		DET'N LIMIT = 1.		GUIDELINE = 500. (A3)		
JAN	216 CRO	219 CRO	.	.	.	.
FEB	214 CRO	211	.	.	.	.
MAR	216 CRO	218 CRO	.	.	.	.
APR	216 CRO	217 CRO	.	.	.	.
MAY	213 CRO	218 CRO	.	.	.	.
JUN	212 CRO	216 CRO	.	.	.	.
JUL	213 CRO	217 CRO	219 CRO	218 CRO	216 CRO	216 CRO
AUG	202 CRO	207 CRO	208 CRO	210 CRO	209 CRO	209 CRO
SEP	200 CRO	203 CRO	206 CRO	205 CRO	204 CRO	203 CRO
OCT	209 CRO	213 CRO	213 CRO	211 CRO	211 CRO	211 CRO
NOV	212 CRO	215 CRO	216 CRO	214 CRO	214 CRO	213 CRO
DEC	212 CRO	215 CRO	216 CRO	216 CRO	.	216 CRO
TURBIDITY (FTU)		DET'N LIMIT = .02		GUIDELINE = 1.00 (A1)		
JAN	2.200	.280	.	.	.	.
FEB	1.900	.200	.	.	.	.
MAR	1.230	.140	.	.	.	.
APR	1.840	.370	.	.	.	.
MAY	.820	.150	.	.	.	.
JUN	.830	.170	.	.	.	.
JUL	.920	.420	.720	.800	1.170	.380
AUG	1.340	.440	.620	.790	.380	.210
SEP	.820	.210	.440	.410	.280	.240
OCT	1.010	.230	.510	.550	.180	.140
NOV	.700	.050 <T	.300	.540	.120	.100 <T
DEC	.700	.070 <T	.340	.370	.	.110

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE						
	RAW	TREATED	SITE 1		SITE 2	
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW
METALS						
ALUMINUM (MG/L)			DET'N LIMIT = .004		GUIDELINE = .10 (A4)	
JAN	.038	.081	.	.	.	.
FEB	.045	.045	.	.	.	.
MAR	.025	.085	.	.	.	.
APR	.034	.120	.	.	.	.
MAY	.009	.088	.	.	.	.
JUN	.009	.070	.	.	.	.
JUL	BDL	.087	.064	.060	.220	.063
AUG	BDL	.270	.160	.150	.150	.150
SEP	.017	!IS	.110	.120	.140	.150
OCT	.017	.088	.100	.080	.083	.085
NOV	.220	.081	.066	.062	.071	.066
DEC	.008	.038	.046	.039	.	.062
ARSENIC (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = .050 (A1)	
APR	BDL	BDL	.	.	.	.
MAY	BDL	.001	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	BDL	BDL	BDL	BDL	.002	.001
AUG	BDL	BDL	BDL	BDL	BDL	BDL
SEP	BDL	.001	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	BDL	BDL	BDL	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	.	BDL
BARIUM (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = 1.000 (A1)	
JAN	.020	.020	.	.	.	.
FEB	.022	.021	.	.	.	.
MAR	.021	.021	.	.	.	.
APR	.028	.021	.	.	.	.
MAY	.020	.020	.	.	.	.
JUN	.020	.020	.	.	.	.
JUL	.024	.024	.026	.024	.025	.024
AUG	.021	.021	.019	.019	.018	.018
SEP	.018	!IS	.017	.018	.017	.017
OCT	.018	.017	.018	.017	.018	.018
NOV	.020	.018	.019	.018	.018	.018
DEC	.018	.018	.018	.018	.	.018
BORON (MG/L)			DET'N LIMIT = 0.01		GUIDELINE = 5.000 (A1)	
JAN	.020	BDL	.	.	.	.
FEB	.030	.030	.	.	.	.
MAR	.030	.020	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

SITE	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW
APR	.020	.020	.	.	.	.
MAY	.020 <T	.030 <T	.	.	.	.
JUN	.040	.040	.	.	.	.
JUL	.020 <T	.020 <T	.020 <T	.020 <T	.020 <T	.030 <T
AUG	.020 <T	.020 <T	.030 <T	.020 <T	.030 <T	.010 <T
SEP	BDL	.030 <T	.020 <T	.020 <T	.020 <T	.010 <T
OCT	.020 <T	.030 <T	.040 <T	.030 <T	.030 <T	.030 <T
NOV	.030 <T	.030 <T	.030 <T	.020 <T	.020 <T	.020 <T
DEC	.024 <T	.026 <T	.028 <T	.029 <T	.	.030 <T
CYANIDE (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = .200 (A1)	
JAN	BDL	BDL	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	BDL	BDL	.	.	.	.
CHROMIUM (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = .05 (A1)	
JAN	BDL	.001	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	BDL	.001	.	.	.	.
APR	BDL	BDL	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	.001	BDL	BDL	BDL	BDL	BDL
AUG	BDL	.001	BDL	BDL	BDL	BDL
SEP	BDL	!IS	BDL	BDL	BDL	BDL
OCT	.001	.001	.002	.002	.001	.002
NOV	.002	.002	.002	.001	.002	.002
DEC	.002	.002	.002	.002	.	.002
COPPER (MG/L)			DET'N LIMIT = .001		GUIDELINE = 1.0 (A3)	
JAN	.027	.008	.	.	.	.
FEB	.039	.019	.	.	.	.
MAR	.017	.008	.	.	.	.
APR	.039	.009	.	.	.	.
MAY	.044	.017	.	.	.	.
JUN	.011	.008	.	.	.	.
JUL	.042	.010	.048	.008	.017	.003
AUG	.049	.014	.032	.007	.016	.004
SEP	.037	!IS	.033	.007	.012	.004
OCT	.035	.015	.039	.006	.010	.003
NOV	.026	.018	.035	.006	.014	.004
DEC	.018	.025	.031	.005	.	.005
IRON (MG/L)			DET'N LIMIT = .002		GUIDELINE = .300 (A3)	

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE						
	RAW	TREATED	SITE 1		SITE 2	
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW
JAN	.027	.002	.	.	.	.
FEB	.057	.002	.	.	.	.
MAR	.021	.005	.	.	.	.
APR	.031	.001	.	.	.	.
MAY	.027	BDL	.	.	.	.
JUN	.046	BDL	.	.	.	.
JUL	.018	BDL	.230	.170	.180	.037
AUG	.067	.014	.180	.200	.042	.035
SEP	.021	!IS	.140	.170	.043	.051
OCT	.013	BDL	.240	.140	.045	.057
NOV	.110	.003	.150	.210	.036	.039
DEC	.012	BDL	.073	.140	.	.042
MERCURY (UG/L)			DET'N LIMIT = 0.010		GUIDELINE = 1.000 (A1)	
JAN	BDL	BDL	.	.	.	.
FEB	.010	.010	.	.	.	.
MAR	.020	.020	.	.	.	.
APR	.010	.020	.	.	.	.
MAY	.020	.020	.	.	.	.
JUN	.030	.030	.	.	.	.
JUL	.030	.030	.	.030	.	.020
AUG	.040	.030	.	.070	.	.060
SEP	.070	.070	.	.070	.	.090
OCT	.030	.040	.	.040	.	.040
NOV	.060	.070	.	.070	.	.060
DEC	.140	.170	.	.180	.	.180
MANGANESE (MG/L)			DET'N LIMIT = .001		GUIDELINE = .050 (A3)	
JAN	.002	BDL	.	.	.	.
FEB	.004	BDL	.	.	.	.
MAR	.001	BDL	.	.	.	.
APR	.002	BDL	.	.	.	.
MAY	.002	BDL	.	.	.	.
JUN	.001	BDL	.	.	.	.
JUL	.003	.001	.007	.005	.003	.001
AUG	.001	.001	.006	.005	.002	.001
SEP	.001	!IS	.006	.005	.002	.002
OCT	.002	BDL	.006	.004	.001	.002
NOV	.003	BDL	.005	.006	.002	.002
DEC	.002	.001	.003	.004	.	.002
MOLYBDENUM (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = .50 (H)	
JAN	.001	.001	.	.	.	.
FEB	BDL	.001	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE						
	RAW	TREATED	SITE 1		SITE 2	
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW
MAR	.001	.001	.	.	.	.
APR	.001	.001	.	.	.	.
MAY	.001	.001	.	.	.	.
JUN	.001	.001	.	.	.	.
JUL	.001	.001	BDL	BDL	BDL	BDL
AUG	.001	.001	BDL	BDL	.001	.001
SEP	.001	!IS	BDL	BDL	.001	.001
OCT	.001	BDL	.001	.001	BDL	.001
NOV	BDL	BDL	BDL	BDL	.002	.001
DEC	BDL	.001	.001	BDL	.	.001
NICKEL (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = .05 (F3)	
JAN	BDL	BDL	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	BDL	BDL	.	.	.	.
APR	BDL	BDL	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	.002	BDL	.006	BDL	.003	.002
AUG	BDL	BDL	.002	BDL	BDL	BDL
SEP	BDL	!IS	.002	BDL	BDL	BDL
OCT	.001	.002	.003	.002	.002	.002
NOV	.002	.002	.002	.002	.002	.002
DEC	.001	.001	.002	.002	.	.001
LEAD (MG/L)			DET'N LIMIT = 0.003		GUIDELINE = .050 (A1)	
JAN	BDL	BDL	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	.004	.004	.	.	.	.
APR	BDL	BDL	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	.004	BDL	.	.	.	.
JUL	BDL	BDL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	.006	.005	.003	.004
SEP	BDL	!IS	.004	BDL	BDL	BDL
OCT	BDL	BDL	.003	BDL	BDL	BDL
NOV	BDL	BDL	.005	BDL	BDL	BDL
DEC	BDL	BDL	BDL	BDL	.	BDL
STRONTIUM (MG/L)			DET'N LIMIT = .001		GUIDELINE = 2.00 (H)	
JAN	.160	.160	.	.	.	.
FEB	.180	.170	.	.	.	.
MAR	.170	.170	.	.	.	.
APR	.170	.170	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE						
	RAW	TREATED	SITE 1		SITE 2	
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW
MAY	.170	.160	.	.	.	.
JUN	.160	.160	.	.	.	.
JUL	.190	.190	.200	.190	.190	.200
AUG	.160	.170	.150	.150	.150	.150
SEP	.150	!IS	.140	.150	.150	.140
OCT	.160	.150	.160	.150	.150	.150
NOV	.170	.160	.160	.160	.160	.160
DEC	.160	.150	.150	.160	.	.160
URANIUM (UG/L)			DET'N LIMIT = .02		GUIDELINE = 20. (A2)	
JAN	.310	.310	.	.	.	.
FEB	.360	.360	.	.	.	.
MAR	.300	.340	.	.	.	.
APR	.310	.360	.	.	.	.
MAY	.360	.370	.	.	.	.
JUN	.270	.280	.	.	.	.
JUL	.310	.360	.350	.340	.360	.360
AUG	.020	.020	.020	.020	.020	.020
SEP	.420	.450	.380	.400	.390	.390
OCT	.450	.500	.550	.430	.460	.470
NOV	.340	.350	.390	.390	.400	.380
DEC	.350	.340	.370	.360	.	.360
VANADIUM (MG/L)			DET'N LIMIT = .001		GUIDELINE = .10 (H)	
JAN	BDL	BDL	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	BDL	BDL	.	.	.	.
APR	BDL	BDL	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	.001	BDL	BDL	BDL	BDL	BDL
AUG	BDL	BDL	BDL	BDL	BDL	BDL
SEP	BDL	!IS	BDL	BDL	BDL	BDL
OCT	BDL	BDL	BDL	BDL	BDL	BDL
NOV	.001	BDL	.001	BDL	BDL	BDL
DEC	.001	.001	BDL	BDL	.	.001
ZINC (MG/L)			DET'N LIMIT = .001		GUIDELINE = 5.00 (A3)	
JAN	.003	.002	.	.	.	.
FEB	.001	BDL	.	.	.	.
MAR	.015	.001	.	.	.	.
APR	.001	.002	.	.	.	.
MAY	.002	.002	.	.	.	.
JUN	BDL	BDL	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

SITE TYPE	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JUL	.004	.004	.008	.003	.011	.003
AUG	.001	.002	.005	.003	.010	.090
SEP	.001	!IS	.004	.001	.005	.001
OCT	BDL	BDL	.004	BDL	.004	BDL
NOV	BDL	BDL	.003	BDL	.006	BDL
DEC	.002	.001	.003	.002	.	.002

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE			SITE 1		SITE 2	
TYPE	RAW	TREATED	STANDING	FREE FLOW	STANDING	FREE FLOW
CHLOROAROMATICS						
123 TRICHLOROBENZENE (NG/L)			DET'N LIMIT = 5.000		GUIDELINE = 10000. (I)	
JAN	BDL	BDL	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	BDL	BDL	.	.	.	.
APR	BDL	BDL	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	6.000. <T	.	.	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	BDL	BDL	.	.	.	BDL
SEP	BDL	BDL	.	BDL	.	BDL
OCT	BDL	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	BDL	.	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE			SITE 1		SITE 2	
TYPE	RAW	TREATED	STANDING	FREE FLOW	STANDING	FREE FLOW
METALS						
ARSENIC (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = .050 (A1)	
JAN	.001	.002	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	BDL	BDL	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE						
	RAW	TREATED	SITE 1		SITE 2	
TYPE			STANDING	FREE FLOW	STANDING	FREE FLOW
PESTICIDES & PCB						
ALPHA BHC (NG/L)		DET'N LIMIT = 1.000		GUIDELINE = 700. (G)		
JAN	3.000 <T	3.000 <T	.	.	.	.
FEB	2.000 <T	2.000 <T	.	.	.	.
MAR	3.000 <T	3.000 <T	.	.	.	.
APR	1.000 <T	1.000 <T	.	.	.	.
MAY	4.000 <T	2.000 <T	.	.	.	.
JUN	3.000 <T	3.000 <T	.	.	.	.
JUL	BDL	2.000 <T	.	BDL	.	2.000 <T
AUG	3.000 <T	1.000 <T	.	.	.	2.000 <T
SEP	BDL	BDL	.	BDL	.	3.000 <T
OCT	BDL	2.000 <T	.	2.000 <T	.	2.000 <T
NOV	BDL	BDL	.	BDL	.	BDL
DEC	3.000 <T	3.000 <T	.	3.000 <T	.	3.000 <T
LINDANE (NG/L)		DET'N LIMIT = 1.000		GUIDELINE = 4000.0 (A1)		
JAN	1.000 <T	1.000 <T	.	.	.	.
FEB	BDL	1.000 <T	.	.	.	.
MAR	1.000 <T	BDL	.	.	.	.
APR	BDL	BDL	.	.	.	.
MAY	1.000 <T	BDL	.	.	.	.
JUN	BDL	1.000 <T	.	.	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	BDL	1.000 <T	.	.	.	BDL
SEP	BDL	BDL	.	BDL	.	1.000 <T
OCT	BDL	BDL	.	1.000 <T	.	1.000 <T
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	BDL	.	1.000 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE			SITE 1		SITE 2	
TYPE	RAW	TREATED	STANDING	FREE FLOW	STANDING	FREE FLOW
PHENOLICS						
PHENOL (UG/L)			DET'N LIMIT = 0.2		GUIDELINE = 2.00 (A3)	
JAN	BDL	BDL	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	.600 <T	.600 <T	.	.	.	.
APR.	.400 <T	.600 <T	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	BDL	BDL	.	.	.	.
AUG	BDL	BDL	.	.	.	.
SEP	BDL	BDL	.	.	.	.
OCT	BDL	BDL	.	.	.	.
NOV	BDL	BDL	.	.	.	.
DEC	BDL	BDL	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE			SITE 1		SITE 2	
TYPE	RAW	TREATED	STANDING	FREE FLOW	STANDING	FREE FLOW
VOLATILES						
TOLUENE (UG/L)			DET'N LIMIT = 0	GUIDELINE = 100.0 (G)		
JAN	BDL	BDL	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	BDL	BDL	.	.	.	.
APR	BDL	BDL	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	BDL	BDL	.	BDL	.	BDL
SEP	BDL	.200 <T	.	.100 <T	.	BDL
OCT	BDL	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	.100 <T	.	BDL
DEC	BDL	BDL	.	BDL	.	BDL
ETHYLBENZENE (UG/L)			DET'N LIMIT = 0	GUIDELINE = 3400. (D3)		
JAN	BDL	BDL	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	BDL	BDL	.	.	.	.
APR	BDL	BDL	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	.200 <T	.150 <T	.	BDL	.	BDL
AUG	BDL	BDL	.	BDL	.	.150 <T
SEP	BDL	.100 <T	.	.100 <T	.	.050 <T
OCT	BDL	BDL	.	.100 <T	.	BDL
NOV	BDL	.200 <T	.	BDL	.	BDL
DEC	BDL	BDL	.	BDL	.	BDL
P-XYLENE (UG/L)			DET'N LIMIT = 0	GUIDELINE = 620. (G)		
JAN	BDL	BDL	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	BDL	BDL	.	.	.	.
APR	BDL	BDL	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	BDL	BDL	.	BDL	.	BDL
SEP	BDL	.000 RMP	.	BDL	.	BDL
OCT	BDL	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	BDL	.	BDL
M-XYLENE (UG/L)			DET'N LIMIT = 0	GUIDELINE = 620. (G)		
JAN	BDL	BDL	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE			SITE 1		SITE 2	
TYPE	RAW	TREATED	STANDING	FREE FLOW	STANDING	FREE FLOW
FEB	BDL	BDL	.	.	.	.
MAR	BDL	BDL	.	.	.	.
APR	BDL	BDL	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	BDL	BDL	.	BDL	.	BDL
SEP	BDL	.100 <T	.	BDL	.	BDL
OCT	BDL	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	BDL	.	BDL
O-XYLENE (UG/L)			DET'N LIMIT = 0	GUIDELINE = 620. (G)		
JAN	BDL	BDL	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	BDL	BDL	.	.	.	.
APR	BDL	BDL	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	BDL	.	.	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	BDL	BDL	.	BDL	.	BDL
SEP	BDL	.050 <T	.	BDL	.	BDL
OCT	BDL	BDL	.	BDL	.	BDL
NOV	BDL	BDL	.	BDL	.	BDL
DEC	BDL	BDL	.	BDL	.	BDL
CHLOROFORM (UG/L)			DET'N LIMIT = 0	GUIDELINE = 350.0 (A1+)		
JAN	BDL	6.000	.	.	.	.
FEB	BDL	9.000	.	.	.	.
MAR	BDL	6.000	.	.	.	.
APR	BDL	7.000	.	.	.	.
MAY	BDL	8.000	.	.	.	.
JUN	BDL	9.600	.	.	.	.
JUL	BDL	11.000	.	10.000	.	10.000
AUG	BDL	11.500	.	11.600	.	11.600
SEP	.200 <T	12.200	.	12.000	.	10.500
OCT	BDL	7.900	.	7.500	.	8.200
NOV	BDL	7.500	.	11.700	.	10.100
DEC	BDL	7.200	.	5.900	.	7.000
DICHLOROBROMOMETHANE (UG/L)			DET'N LIMIT = 0	GUIDELINE = 350.0 (A1+)		
JAN	BDL	6.000	.	.	.	.
FEB	BDL	7.000	.	.	.	.
MAR	BDL	6.000	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE			SITE 1		SITE 2	
TYPE	RAW	TREATED	STANDING	FREE FLOW	STANDING	FREE FLOW
APR	BDL	6.000	.	.	.	.
MAY	BDL	6.000	.	.	.	.
JUN	BDL	7.700	.	.	.	.
JUL	BDL	8.000	.	7.000	.	7.000
AUG	BDL	8.600	.	8.000	.	8.400
SEP	BDL	8.100	.	7.600	.	8.500
OCT	BDL	7.000	.	6.500	.	7.100
NOV	BDL	7.400	.	9.100	.	8.600
DEC	BDL	7.000	.	6.100	.	6.600
CHLORODIBROMOMETHANE (UG/L)			DET'N LIMIT = 0		GUIDELINE = 350.0 (A1+)	
JAN	BDL	4.000	.	.	.	.
FEB	BDL	4.000	.	.	.	.
MAR	BDL	4.000	.	.	.	.
APR	BDL	3.000	.	.	.	.
MAY	BDL	5.000	.	.	.	.
JUN	BDL	5.500	.	.	.	.
JUL	BDL	4.000	.	4.000	.	4.000
AUG	BDL	4.200	.	4.200	.	4.500
SEP	BDL	4.400	.	4.400	.	4.400
OCT	BDL	3.900	.	3.700	.	3.900
NOV	BDL	3.900	.	4.700	.	4.500
DEC	BDL	4.000	.	3.600	.	4.000
BROMOFORM (UG/L)			DET'N LIMIT = 0		GUIDELINE = 350.0 (A1+)	
JAN	BDL	BDL	.	.	.	.
FEB	BDL	BDL	.	.	.	.
MAR	BDL	BDL	.	.	.	.
APR	BDL	1.000 <T	.	.	.	.
MAY	BDL	BDL	.	.	.	.
JUN	BDL	.200 <T	.	.	.	.
JUL	BDL	BDL	.	BDL	.	BDL
AUG	BDL	BDL	.	BDL	.	BDL
SEP	BDL	.400 <T	.	.400 <T	.	.400 <T
OCT	BDL	.200 <T	.	.200 <T	.	.200 <T
NOV	BDL	.400 <T	.	.400 <T	.	.400 <T
DEC	BDL	BDL	.	BDL	.	BDL
TOTL TRIHALOMETHANES (UG/L)			DET'N LIMIT = 0		GUIDELINE = 350.0 (A1)	
JAN	BDL	16.000	.	.	.	.
FEB	BDL	20.000	.	.	.	.
MAR	BDL	16.000	.	.	.	.
APR	BDL	16.000	.	.	.	.
MAY	BDL	19.000	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM			
SITE TYPE	RAW	TREATED	SITE 1		SITE 2	
			STANDING	FREE FLOW	STANDING	FREE FLOW
JUN	BDL	23.000	.	.	.	.
JUL	BDL	23.000	.	21.000	.	21.000
AUG	BDL	24.300	.	23.800	.	24.500
SEP	.200	25.100	.	24.400	.	23.800
OCT	BDL	19.000	.	17.900	.	19.400
NOV	BDL	19.200	.	25.900	.	23.600
DEC	BDL	18.200	.	15.600	.	17.600

TABLE 6

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

COUNT OF PARAMETERS NOT FOUND ABOVE THE DETECTION LIMIT

SCAN	PARAMETER	ANALYSED	DETECTION LIMIT	GUIDELINE	
METALS	BERYLLIUM	47	0.001	.0002 (H)	MG/L
	CADMIUM	47	0.300	5.000 (A1)	UG/L
	COBALT	47	0.001	1.0 (H)	MG/L
	SELENIUM	47	0.001	.010 (A1)	MG/L
CHLOROAROMATICS	HEXACHLOROBUTADIENE	35	1.000	450. (D4)	NG/L
	1234 T-CHLOROBENZENE	35	1.000	10000. (I)	NG/L
	1235 T-CHLOROBENZENE	35	1.000	10000. (I)	NG/L
	124 TRICHLOROBENZENE	35	5.000	10000. (I)	NG/L
	1245 T-CHLOROBENZENE	35	1.000	38000. (D4)	NG/L
	135 TRICHLOROBENZENE	35	5.000	10000. (D4)	NG/L
	HEXACHLOROETHANE	35	1.000	1900. (D4)	NG/L
	OCTACHLOROSTYRENE	35	1.000	N/A	NG/L
	PENTACHLOROBENZENE	35	1.000	74000. (D4)	NG/L
	236 TRICHLOROTOLUENE	35	5.000	N/A	NG/L
	245 TRICHLOROTOLUENE	35	5.000	N/A	NG/L
	26A TRICHLOROTOLUENE	35	5.000	N/A	NG/L
CHLOROPHENOLS	234 TRICHLOROPHENOL	4	50.	N/A	NG/L
	2345 T-CHLOROPHENOL	4	50.	N/A	NG/L
	2356 T-CHLOROPHENOL	4	50.	N/A	NG/L
	245-TRICHLOROPHENOL	4	50.	2600000(D4)	NG/L
	246-TRICHLOROPHENOL	4	50.	10000. (C1)	NG/L
	PENTACHLOROPHENOL	4	50.	10000. (C1)	NG/L
PAH	PHENANTHRENE	8	0	N/A	NG/L
	ANTHRACENE	8	0	N/A	NG/L
	FLUORANTHENE	8	0	42000 (D4)	NG/L
	PYRENE	8	0	N/A	NG/L
	BENZO(A)ANTHRACENE	8	0	N/A	NG/L
	CHRYSENE	8	0	N/A	NG/L
	DIMETH. BENZ(A)ANTHR	8	0	N/A	NG/L
	BENZO(E)PYRENE	8	0	N/A	NG/L
	BENZO(J) FLUORANTHEN	8	N/A	N/A	NG/L
	BENZO(B) FLUORANTHEN	8	0	N/A	NG/L
	PERYLENE	8	0	N/A	NG/L
	BENZO(K) FLUORANTHEN	8	N/A	N/A	NG/L
	BENZO (A) PYRENE	8	0	10 (B1)	NG/L
	BENZO(G,H,I) PERYLEN	8	0	N/A	NG/L
	DIBENZO(A,H) ANTHRAC	8	0	N/A	NG/L
	INDENO(1,2,3-C,D) PY	8	0	N/A	NG/L
	BENZO(B) CHRYSENE	8	0	N/A	NG/L
	ANTHANTHRENE	8	N/A	N/A	NG/L
	CORONENE	8	0	N/A	NG/L
PESTICIDES & PCB	ALDRIN	35	1.000	700.0 (A1)	NG/L
	BETA BHC	35	1.000	300. (G)	NG/L
	ALPHA CHLORDANE	35	2.000	7000.0 (A1)	NG/L
	GAMMA CHLORDANE	35	2.000	7000.0 (A1)	NG/L
	DIELDRIN	35	2.000	700.0 (A1)	NG/L
	METHOXYCHLOR	35	5.000	100000.(A1)	NG/L

TABLE 6

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

COUNT OF PARAMETERS NOT FOUND ABOVE THE DETECTION LIMIT

SCAN	PARAMETER	ANALYSED	DETECTION LIMIT	GUIDELINE	
PESTICIDES & PCB	THIODAN I	35	2.000	74000. (D4)	NG/L
	THIODAN II	35	4.000	74000. (D4)	NG/L
	ENDRIN	35	4.000	200.0 (A1)	NG/L
	THIODAN SULPHATE	35	4.000	N/A	NG/L
	HEPTACHLOR EPOXIDE	35	1.000	3000.0 (A1)	NG/L
	HEPTACHLOR	35	1.000	3000.0 (A1)	NG/L
	MIREX	35	5.000	N/A	NG/L
	OXYCHLORDANE	35	2.000	N/A	NG/L
	OPDDT	35	5.000	30000. (A1)	NG/L
	PCB	35	20.000	3000. (A2)	NG/L
	PP-DDD	35	5.000	N/A	NG/L
	PPDDE	35	1.000	30000. (A1)	NG/L
	PPDDT	35	5.000	30000. (A1)	NG/L
	ATRATONE	36	50.	N/A	NG/L
	ALACHLOR	36	500.	35000. (D2)	NG/L
	ETHYLENE DIBROMIDE	36	0	50.0 (G)	UG/L
	HCB	35	1.000	10.0 (C1)	NG/L
SPECIFIC PESTICIDES	TOXAPHENE	35	N/A	5000. (A1)	NG/L
	AMETRYNE	36	50.00	300000.(D3)	NG/L
	ATRAZINE	36	50.00	60000. (B3)	NG/L
	BLADEX	36	100.00	10000. (B3)	NG/L
	PROMETONE	36	50.00	52500. (D3)	NG/L
	PROPAZINE	36	50.00	16000. (D2)	NG/L
	PROMETRYNE	36	50.00	1000. (B3)	NG/L
	SENCOR	36	100.00	80000. (B2)	NG/L
	SIMAZINE	36	50.00	10000. (B3)	NG/L
	2,4,5-T	4	50.00	35000. (D2)	NG/L
	2,4-D	4	100.00	100000.(A1)	NG/L
	24DCHLRPHENOXYBUTYRC	4	200.00	18000. (B3)	NG/L
	2,4-DP	4	100.00	N/A	NG/L
	DICAMBA	4	100.00	87000. (B3)	NG/L
	PICHLORAM	4	100.00	2450000(D3)	NG/L
	SILVEX	4	50.00	10000. (A1)	NG/L
	DIAZINON	4	20.	14000. (A1)	NG/L
	DICHLOROVOS	4	20.	N/A	NG/L
	DURSBAN	4	20.	N/A	NG/L
	ETHION	4	20.	35000. (G)	NG/L
	GUTHION	4	N/A	N/A	NG/L
	MALATHION	4	20.	160000. (G)	NG/L
	MEVINPHOS	4	20.	N/A	NG/L
	METHYL PARATHION	4	50.	7000. (B3)	NG/L
	METHYLTRITHION	4	20.	N/A	NG/L
	PARATHION	4	20.	35000. (B1)	NG/L
	PHORATE	4	20.	35.0 (D2)	NG/L
	RELDAN	4	20.	N/A	NG/L
	RONNEL	4	20.	N/A	NG/L
	AMINOCARB	4	N/A	N/A	NG/L
	BENOMYL	4	N/A	N/A	NG/L
	BUX	4	2000.	N/A	NG/L
	CARBOFURAN	4	2000.	18000. (D3)	NG/L
	CIPC	4	2000.	350000. (G)	NG/L

TABLE 6

DRINKING WATER SURVEILLANCE PROGRAM EASTERLY WATER TREATMENT PLANT 1987

COUNT OF PARAMETERS NOT FOUND ABOVE THE DETECTION LIMIT

SCAN	PARAMETER	ANALYSED	DETECTION LIMIT	GUIDELINE	
SPECIFIC PESTICIDES	DIALLATE	4	2000.	30000. (H)	NG/L
	EPTAM	4	2000.	N/A	NG/L
	IPC	4	2000.	N/A	NG/L
	PROPOXUR	4	2000.	90000. (G)	NG/L
	SEVIN	4	200.	70000. (A1)	NG/L
	SUTAN	4	2000.	245000.(D3)	NG/L
	METOLACHLOR	36	500.	50000. (B3)	NG/L
VOLATILES	BENZENE	36	0	5.0 (D1)	UG/L
	1,1 DICHLOROETHYLENE	36	0	7.0 (D1)	UG/L
	DICHLOROMETHANE	36	0	1750. (D3)	UG/L
	T1,2DICHLOROETHYLENE	36	0	350. (D3)	UG/L
	1,1 DICHLOROETHANE	36	0	N/A	UG/L
	111, TRICHLOROETHANE	36	0	200. (D1)	UG/L
	1,2 DICHLOROETHANE	36	0	5.0 (D1)	UG/L
	CARBON TETRACHLORIDE	36	0	5.0 (D1)	UG/L
	1,2 DICHLOROPROPANE	36	0	10.0 (G)	UG/L
	TRICHLOROETHYLENE	36	0	5.0 (D1)	UG/L
	112 TRICHLOROETHANE	36	0	.60 (D4)	UG/L
	T-CHLOROETHYLENE	36	0	10.0 (C2)	UG/L
	1122 T-CHLOROETHANE	36	0	0.17 (D4)	UG/L
	CHLOROBENZENE	36	0	1510. (D3)	UG/L
	1,4 DICHLOROBENZENE	36	0	75.0 (D1)	UG/L
	1,3 DICHLOROBENZENE	36	0	130. (G)	UG/L
	1,2 DICHLOROBENZENE	36	0	130. (G)	UG/L
	TRIFLUOROCHLOROTOLUE	36	0	N/A	UG/L
	ETHYLENE DIBROMIDE	36	0	50.0 (G)	UG/L

Appendix A

DRINKING WATER SURVEILLANCE PROGRAM

The Drinking Water Surveillance Program (DWSP) for Ontario monitors drinking water quality at municipal water supply systems. The DWSP Database Management System provides a computerized drinking water quality information system for the supplies monitored. The objectives of the program are to provide:

- immediate, reliable, current information on drinking water quality,
- a flagging mechanism for 'Objective' exceedence,
- a definition of contaminant levels and trends,
- a comprehensive background for remedial action,
- a framework for assessment of new contaminants,
- and an indication of treatment efficiency of plant processes.

Program

The DWSP officially began in April 1986 and is designed to eventually include all municipal water supplies in Ontario; currently 44 plants are being monitored. Water supply locations have been prioritized for surveillance, based primarily on criteria such as population density, probability of contamination and geographical location.

An ongoing assessment of future monitoring requirements at each location will be made. Monitoring will continue at the initial locations at an appropriate level and further locations will be phased into the program as resources permit. It is estimated that after 4 years of operation, the program will be monitoring 90 locations.

A major goal of the program is to collect valid water quality data, in context with plant operational characteristics at the time of sampling. As soon as sufficient data have been accumulated and analysed, both the frequency of sampling and the range of parameters may be adjusted accordingly.

Assessments are carried out at all locations prior to initial sampling in order to acquire complete plant process and distribution system details, and to designate (and retrofit if necessary) all sampling systems and locations. This ensures that the sampled water is a reflection of the water itself.

Samples are taken of the raw (ambient water) and the treated water at the treatment plant, and of consumer's tap water in the distribution system. In order to determine possible effects of distribution on water quality, both standing and free flow water in old and new sections of the distribution system are sampled.

Sampling is carried out by operational personnel who have been trained in the applicable procedures.

Comprehensive standardized procedures and Field Test kits are supplied to sampling personnel. This ensures that samples are taken and handled according to standard protocols and that field testing will supply reliable data. All field and laboratory analyses are carried out using "approved documented procedures". All laboratory analyses are carried out by the MOE Laboratory Services Branch.

Data Reporting Mechanism

When the analytical results are transferred from the MOE laboratory into the DWSP system, printouts of the completed analyses are sent to the MOE District Officer, the appropriate operational staff and are also retained by the DWSP co-ordinator.

DWSP INPUTS AND OUTPUTS

The DWSP INPUTS and OUTPUTS are illustrated in Fig. 1.

PROGRAM INPUTS

PLANT AND DISTRIBUTION SYSTEM DESCRIPTION

The system description includes plant specific non-analytical information acquired through a questionnaire and initial plant visit. During the initial assessment of the plant and distribution system the questionnaire content is verified and

missing information added. It is intended that all data be kept current with scheduled annual updates.

The PLANT and DISTRIBUTION SYSTEM DESCRIPTION consists of the following seven components.

1. Process component inventory

All physical and chemical processes that the water is subjected to, from the intake pipe to the consumers' tap (where possible), are documented. These include: process type, general description of physical structures, material types, sizes, and retention time for each process within the plant. The processes may be as simple as transmission or as complex as carbon adsorption.

2. Treatment chemicals

Chemicals used in the treatment processes, their function, application point, supplier and brand-name are recorded. The chemical dosages applied on the day of sampling are recorded in DWSP.

3. Process control measurements

Documentation of in-plant monitoring of process parameters (turbidity, chlorine residuals, pH, aluminum residuals) including methods used, monitoring locations and frequency is contained in this section. In-plant monitoring results are generally not retained in DWSP but are retained by the Water Treatment Plant.

4. Design flow and retention time

The hydraulic capacity, designed and actual, is noted here. Retention time (the time that a block of water is retained in the plant) is also noted. The maximum, minimum and average flow as well as a record of the flow rate on the day of sampling are recorded in DWSP.

5. Distribution system description

This area includes the storage and transmission characteristics of the distribution system after the water leaves the plant.

6. Sampling system

Each plant is assessed for its adequacy in terms of sampling of bacteriological, organic and inorganic parameters. The prime considerations in the assessment and design of the sampling system are:

i/ the sample is an accurate representation of the actual water condition, eg. raw water has had no chemical treatment;

ii/ the water being sampled is not being modified by the sampling system;

iii/ the sample tap must be in a clean area of the plant, preferably a lab area;

iv/ the sample lines must be organically inert (no plastic, ideally stainless steel).

It is imperative that the sampled water be a reflection not of the sampling system but of the water itself.

The sampling system documentation includes: origin of the water; date sampling was initiated; size, length and material type (intake, discharge and tap), pump characteristics (model, type, capacity) and flow rate.

7. People

This section contains the names, addresses and phone numbers of current plant management and operational staff, distribution system management and operational staff, Medical Officer of Health and appropriate Ministry of Environment personnel associated with the plant.

FIELD DATA

The second major input to DWSP is field data.

Field data is collected at the plant and from the distribution system sites on the day of sampling. The field data consists of general operating conditions and the results of testing for field parameters. General operating conditions include chemicals used, dosages, flow and retention time on the day of sampling as well as monthly maximum, minimum and average flows. Field parameters include turbidity, chlorine residuals (free,combined and total), temperature and pH. These parameters are analysed according to standardized DWSP protocols to allow for interplant comparison.

LABORATORY ANALYTICAL DATA

The third major input to DWSP is Laboratory Analytical Data.

Samples gathered from the raw, treated and distribution sampling sites are analyzed for approximately 160 parameters at a frequency of two to twelve times per year. Sixty-five percent of the parameters are organic. The parameters measured may have health or aesthetic implications when present in drinking water. Many of the parameters may be used in the treatment process or may be treatment by-products. Due to the nature of certain analytical instruments parameters may be measured for in a "scan" producing some results for parameters that are not on the DWSP priority list but which may be of interest. The majority of the parameters are measured on a routine basis however, those that are technically more difficult and/or costly to analyse for are done less frequently. These include Specific Pesticides and Chlorophenols.

Although the parameter list is extensive, additional parameters with the potential to cause health or aesthetic related problems may be added provided reliable analytical and sampling methods exist.

All laboratory generated data is derived from standardized, documented analytical protocols. The analytical method is an integral part of the data and as methods change notation will be made and intercomparison data documented.

PARAMETER REFERENCE INFORMATION

The fourth major input to DWSP is Parameter Reference Information

This is a catalogue of information for each substance analysed on DWSP. It includes parameter name and aliases, physical and chemical properties, basic toxicology, world-wide health limits, treatment methods and uses. The Parameter Reference Information is computerized and can be accessed through the Query function of the DWSP database.

An example is shown in fig. 2.

A written copy (hard version) of the Parameter Reference Information will be available in the near future and is a new and sophisticated enhancement to the DWSP.

PROGRAM OUTPUTS

There are four major program outputs, Query, Action Alert, Report Generation and the Annual Report.

QUERY

All DWSP information is easily accessed through the Query function, therefore anything from addresses of plant personnel to complete water quality information for a plant's water supply is instantly available. The DWSP computer system makes relatively complex inquiries manageable. A personal password allowing access into the DWSP query mode in all MOE offices is being developed by the DWSP group.

ACTION ALERTS

Drinking Water quality in Ontario is evaluated against provincial objectives as outlined in the publication, Ontario Drinking Water Objectives (ISBN 0-7729-2725-1 revised 1983). This publication contains health-related Maximum Acceptable Concentrations for thirty substances. Should the reported level of a substance in treated water exceed the Ontario Drinking Water Objective an "Action Alert" requiring resampling and confirmation is issued. This assures that operational staff, health authorities and the public are notified as soon as possible of confirmation of an exceedance and remedial action taken. This report supplies a history of the occurrence of past exceedences at the plant plus a historical summary on the parameter of concern.

In the absence of Ontario Drinking Water Objectives, other agency guidelines which are documented in the Parameter Reference Information may be used. If these guidelines are exceeded the results are flagged and evaluated by DWSP personnel. An "Action Alert" will be issued if warranted.

REPORT GENERATION

Custom reports can be generated from DWSP to meet the needs of the regions and to respond to public requests.

ANNUAL REPORTS

It is the practice of DWSP to produce an annual report containing analytical data along with companion plant information.

FIG. 1

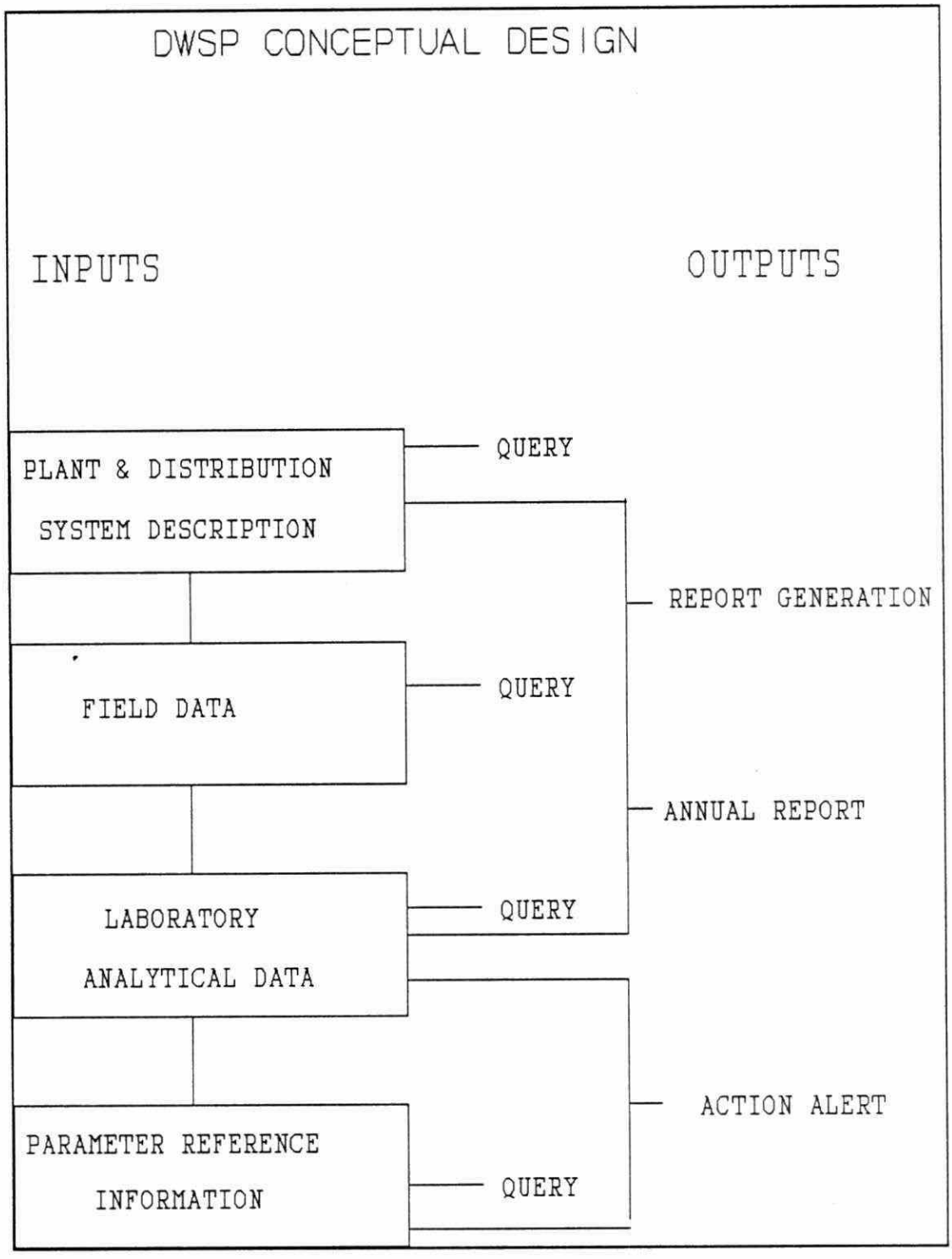

DWSP CONCEPTUAL DESIGN
INPUTS
OUTPUTS
PLANT & DISTRIBUTION SYSTEM DESCRIPTION
FIELD DATA
LABORATORY ANALYTICAL DATA
PARAMETER REFERENCE INFORMATION
QUERY
QUERY
QUERY
QUERY
REPORT GENERATION
ANNUAL REPORT
ACTION ALERT

FIG.2

MOE - DRINKING WATER ASSESSMENT PROGRAM (DWSP)

(B2001P) PARAMETER
REFERENCE
BENZENE

SOURCE	FROM	TO	METHOD	TARG	UNIT	NOTE
EPA	C 86/04		NOMETH	.00	063000 UG/L	RMCL
EPAA	C 80/11		NOMETH	6.60	063000 UG/L	
FERC	C 84/05		NOMETH	1.00	063000 UG/L	
WHO	C 84/01		NOMETH	10.00	064000 UG/L	

DESCRIPTION: NAME: BENZENE
CAS#: 71432
MOLECULAR FORMULAE: C_6H_6
DETECTION LIMIT: (FOR METHOD POCODO) 0.05 UG/L
SYNONYMS: BENZOLE, COAL NAPHTHA, CARBON OIL (27), CYCLOHEXATRIENE (41)
CHARACTERISTICS: COLOURLESS TO LIGHT YELLOW, MOBILE, NON-POLAR LIQUID, OF HIGHLY REFRACTIVE NATURE, AROMATIC, VAPOURS BURN WITH SMOKING FLAME (30)
PROPERTIES:
SOLUBILITY IN WATER: 1780-1800 MG/L AT 25 DEG C (41)
THRESHOLD ODOUR: NO DATA
THRESHOLD TASTE: 0.5 MG/L IN WATER (39)
ENVIRONMENTAL FATE: MAY BIOACCUMUALTE IN LIVING ORGANISMS, APPEARS TO BIOACCUMULATE IN ANIMAL TISSUES THAT EXHIBIT HIGH LIPID CONTENT OR ARE MAJOR METABOLIC SITES (LIVER, BRAIN), SMALL QUANITIES EVAPORATE FROM SOIL OR DEGRADE QUICKLY
SOURCES: PETROLEUM REFINING, SOLVENT RECOVERY, COAL T A R DISTILLATION, FOOD PROCESSING, TANNING.
USES: PREPERATION OF ETHYL BENZENE USED AS A STYRENE MONOMER, DETERGENTS, NYLON, AS INTERMEDIATE IN PESTICIDE PRODUCTION, SOLVENT IN RUBBER INDUSTRY, DEGREASING AND CLEANSING AGENT, GASOLINE.
TOXICITY: RATING 4 (VERY TOXIC); ACUTE - IRRITATES MUCOUS MEMBRANES, SYMPTONS INCLUDE RESTLESSNESS, CONVULSIONS, DEPRESSION, RESPIRATORY FAILURE; CHRONIC - ANEMIA AND LEUKEMIA (45).
CARINOGENICITY: HUMAN CARCINOGEN AND MUTAGEN
REMOVAL: GAC ADSORPTION, PRECIPITATION WITH ALUM FOLLOWED BY SEDIMENTATION, COAGULATION AND FLOCCULATION, SOLVENT EXTRACTION, OXIDATION (41).
MOLECULAR WEIGHT: 78.12 GRAMS
MELTING POINT: 5.5 DEGREES C (27)
BOILING POINT: 80.1 DEGREES C (27)
SPECIFIC GRAVITY: 0.879 AT 20 DEGREES C (27)
VAPOUR PRESSURE: 100 MM AT 26.1 DEGREES C
HENRY'S LAW CONSTANT: 0.00555 ATM M_3/MOLE
LOG OCT./WATER PAR.COEFF:K=1.0 1/N=1.6 R=.97 PH=5.3

Appendix B

DWSP SAMPLING GUIDELINE

i) RAW and TREATED at PLANT

General Chemistry	-500 mL clear plastic bottle -rinse bottle with sample three times and discard water -fill to line
Bacti	-250 mL clear glass bottle with white seal on cap -do <u>not</u> rinse bottle; preservative has been added -avoid touching bottle neck or inside of cap -fill to top of red label as marked
Metals	-500 mL clear plastic bottle with white lid -rinse bottle and cap three times, discard -fill to line -add 10 drops nitric acid (**Caution:** HNO_3 is corrosive)
Volatiles (OPOPUP)	-250 mL clear glass bottle -do <u>not</u> rinse bottle -tilt bottle when filling -fill bottle completely; there should be no air bubbles.
Organic (OWOC),(OWTRI),(OAPAHX)	-1 liter brown glass bottle per scan -do <u>not</u> rinse bottle -fill to approx. 1" from top -when 'special pesticides' are requested three extra bottles per sample must be submitted
Cyanide	-500 mL clear plastic bottle -do <u>not</u> rinse bottle -fill to approx. 1" from top -add 10 drops sodium hydroxide (**Caution:** NaOH is corrosive)

Mercury	-250 mL clear glass bottle -rinse bottle and cap three times, discard then fill to top of label -add 20 drops each nitric acid and potassium dichromate (**Caution:** HNO_3 and $KCrO_7$ corrosive)
Phenols	-250 mL clear glass bottle -do <u>not</u> rinse bottle -fill to top of label as marked

<u>Steps</u>

1. Let cold water tap run for several minutes.
2. Record time in submission sheet.
3. Record teperature on submission sheet.
4. Fill up all bottles as per instructions.
5. Record chlorine residuals (free, combined and total for treated water only), turbidity and pH on submission sheet.

ii) Distribution Samples (standing water)

General Chemistry	-500 mL clear palstic bottle -rinse bottle with sample three times and discard -fill to line
Metals	-500 mL clear plastic bottle with white lid -rinse bottle and cap three times, discard -fill to line -add 10 drops nitric acid (**Caution:** HNO_3 is corrosive)

Steps:

1. Record time on submission sheet.
2. Place bucket under tap and open cold water.
3. Fill to predetermined volume.
4. After mixing the water, record the temperature on the submission sheet.
5. Fill general chemistry and metals bottles.
6. Record chlorine residuals (free, combined and total), turbidity and pH on submission sheet.

iii) Distribution Samples (free flow)

General Chemistry	-500 mL clear plastic bottle -rinse bottle with sample three times and discard water -fill to line
Bacti	-250 mL clear glass bottle with white seal on cap -do <u>not</u> rinse bottle; preservative has been added -avoid touching bottle neck or inside of cap -fill to top of red label as marked
Metals	-500 mL clear plastic bottle with white lid -rinse bottle and cap three times, discard -fill to line -add 10 drops nitric acid (**Caution:** HNO_3 is corrosive)
Volatiles (OPOPUP)	-250 mL clear glass bottle -do <u>not</u> rinse bottle; preservative has been added -tilt bottle when filling -fill bottle completely; there should be no air bubbles
Organic (OWOC), (OWTRI)	-1 liter brown glass bottle per scan -do <u>not</u> rinse bottle: preservative has been added -fill to approx. 1" from top
Cyanide	-500 mL clear plastic bottle -do <u>not</u> rinse bottle: preservative has been added -fill to approx. 1" from top -add 10 drops sodium hydroxide (**Caution:** NaOH is corrosive)
Mercury	-250 mL clear glass bottle -rinse bottle and cap three times, discard then fill to top of label -add 20 drops each nitric acid and potassium dichromate (**Caution:** HNO_3 and KCrO7 corrosive)

Steps:

1. Record time on submission sheet.
2. Let cold water flow for ten minutes.
3. Record temperature on submission sheet.
4. Fill all bottles as per instructions.
5. Record chlorine residuals (free, combined and total), tubidity and pH on submission sheet.